THE IMPORTANCE OF POSITIVE SOCIAL ENVIRONMENTS ON ADOLESCENT DEPRESSION AND HEALTH BEHAVIORS

by

Holly Diane Uphold

A dissertation submitted to the faculty of
The University of Utah
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

Department of Sociology

The University of Utah

December 2013

The University of Utah Graduate School

STATEMENT OF DISSERTATION APPROVAL

The dissertation of **Holly Diane Uphold**

has been approved by the following supervisory committee members:

Rebecca Utz	, Chair	**10/10/2013** Date Approved
Ming Wen	, Member	**10/10/2013** Date Approved
Akiko Kamimura	, Member	**10/10/2013** Date Approved
Michael Friedrichs	, Member	**10/10/2013** Date Approved
Heather Melton	, Member	**10/10/2013** Date Approved
Bert Uchino	, Member	**10/10/2013** Date Approved

the Department of **Sociology**

and by David B. Kieda, Dean of The Graduate School.

ABSTRACT

Adolescence is a critical time of growth characterized by constant change in all aspects of human development i.e., social, cognitive, psychological, and biological. The purpose of this dissertation is to investigate how different levels of positive social environments (community, school, family, and friend), characterized as providing various forms of support, affect behaviors (prosocial and risky behaviors) and health outcomes (depressive symptoms) over the course of adolescence. Additionally, this study examines the link between depressive symptoms and positive social environments while considering potential behavioral mechanisms (prosocial and risky behaviors) and developmental differences between males and females. Using grade stratified (6th-12th) regression analyses, this study found that the influence of concurrent positive social environments on behavioral and health outcomes are extremely nuanced in that the magnitude of these effects depend on developmental stage (i.e., grade), developmental outcome (behavior and depressive symptoms), and for depressive symptoms, effects not only varied by developmental stage, but also by gender. Results suggest that adolescence is more than just one transitional period but rather encompasses many transitions and turning points that influence how positive social environments affect adolescent behavior and health outcomes.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER 1

ADOLESCENT DEVELOPMENT: SOCIAL ENVIRONMENTS, BEHAVIORS, AND DEPRESSION

Introduction

Adolescence is a critical time of development characterized by constant change and growth in all aspects of human development i.e., social, cognitive, psychological, and biological. Many of the behaviors or health outcomes that occur during this time can have lasting implications on later life health and development (Choi, 1997; Galambos, 2006; Hoyt, 2012). Adolescent depression is especially problematic because of its prevalence and association to adult obesity (Goodman, 2002) and unemployment (Galambos, 2006), as well, depressed adolescents are more likely to exhibit academic problems, drop-out of school, and attempt suicide (Brooks, 2002; Eggert, 2002). In 2011, 8% of adolescents reported experiencing a major depressive episode with girls reporting about 13% (Adolescent Depression, 2013).

Social environments play an important role in how changes during adolescence affect behavior and health outcomes like depression. Social environments provide exposure to behavior role models (Hirsch, 1985), opportunities and constraints for behavior learning and social interactions (Ensminger, 1992), and/or provide various forms of aid and support (Bliese, 2001) that affect developmental outcomes. Much of

previous research has focused on how social environments negatively affect adolescent health outcomes and The National Research Council and Institute of Medicine (Adolescent Health Services) has called for a shift in research on adolescent emotional and behavior disorders from a myopic focus on health and negative experiences to one that promotes competencies and healthy functioning. This study accomplishes this task by examining the effects of social environments with positive attributes on adolescent outcomes, specifically, social environments that provide positive learning opportunities, positive social interactions, foster positive behaviors, and provide various forms of support play an important role in protecting adolescents from poor health and behavior outcomes (Carlo, 1999); and thus providing insight into how positive experiences protect against problematic behaviors and health outcomes.

Life course theory in combination with Lerner's (2004) positive youth development concept provides a useful framework for understanding how adolescent development is embedded within social contexts over time. In general, life course theory highlights the importance of timing and larger social contexts on developmental outcomes. The concept of timing focuses on the importance of transitions and turning points in human development at crucial points during the life course (Elder, 2004). These transitions and turning points are not only affected by their timing but also by the networks of shared relationships in an individual's life. Networks of shared relationships are fostered within developmental social contexts and are important because the actions of one person in a group can have resounding effects on other members of the group (Elder, 2004). These concepts highlight the importance of turning points or stages during adolescence (early, middle, and late) and how larger social contexts and the relationships

embedded within those contexts affect adolescent behavior and health outcomes over the course of adolescence.

Transitions/turning points and shared relationships within social contexts are highlighted in another developmental concept put forth by Lerner (2009) which more narrowly focuses these ideas on adolescence development, specifically positive development. Lerner (2009) focused a set of ideas based on intraindividual change over time and alignment between youth strengths and resources within social contexts on what he has termed as positive youth development. Positive youth development is a concept which highlights the mutually beneficial relations between an individual and the contexts in which he/she lives (Jelicic, 2007). For instance, Lerner (2004) argued that a young person who has experienced positive youth development as made up of confidence, competence, character, caring, and positive social connections, will not only make multifaceted contributions to self, family, and community, but will also be less likely to engage in risky/problem behaviors.

The overall research objective of this study is to explore the positive influences within social environments i.e., positive social environments, on adolescent development outcomes over the course of adolescence. This study will examine how positive social environments (neighborhood, school, family, and friend) influence behaviors and depressive symptoms over the course of adolescence. Specifically, this study will examine the direct influence of positive social environments on prosocial and risky behaviors (30 day cigarette and alcohol use) and depressive symptoms followed by an examination of prosocial and risky behaviors as possible behavioral mechanisms between positive social environments and depressive symptoms. Furthermore, this study will

highlight how critical developmental stages within adolescence influence the aforementioned relationships. Finally, this study will assess how gender related differences in development affect the influence of positive social environments on depressive symptoms. The present study is divided into five chapters with 6 research aims (Chapter 1 is the general introduction; Chapter 5 is the general conclusion).

The aims of Chapter 2 are as follows: Aim one is to investigate the main effects of positive community, school, family, and peer environments on prosocial and risky behaviors. Aim two is to examine whether the role of positive social environments on prosocial and risky behaviors differ by grade i.e., across the adolescent stages of development (early, middle, late).

The aims of Chapter 3 are as follows: Aim one is to investigate the role of positive social environments on adolescent depressive symptoms and the role of prosocial and risky behaviors as possible mechanisms. Aim two is to examine whether the role of positive social environments on depressive symptoms differ by grade i.e., across the adolescent stages of development (early, middle, late).

The aims of Chapter 4 are as follows: Aim one is to investigate the role of positive social environments on adolescent depressive symptoms between adolescent males and females. Aim two is to examine whether the role of positive social environments on depressive symptoms differ by gender and grade i.e., across the adolescent stages of development (early, middle, late).

The following introduction outlines important concepts related to adolescent development, specifically, positive social environments and their relationship to behavior outcomes, behavioral mechanisms of positive social environments and adolescent

depression, and differences in these relationships related to gender and developmental stages over the course of adolescence.

Life Course Theory and Positive Youth Development

The life course is about progression through time and this study, using life course principles, will focus primarily on adolescence because of its importance as a developmental stage in the progression towards future health and well-being. A life course is defined as "a sequence of socially defined events and roles that the individual enacts over time" (Giele, 1998). These events and roles do not necessarily proceed in any concrete manner but rather the accumulation of them is what defines the life course of an individual (Bruckner, 2005). This idea is often referred to as the principle of "timing of lives," and highlights the importance of transitions and turning points on human development at crucial points during life course (Elder, 2004). Adolescence is ripe with transitions and turning points because of rapidly changing cognitive, psychosocial, physical, and social developments (Smetana, 2006) that affect how adolescents view themselves and their surroundings (Hurd, 2009) thus influencing the choices they make.

Choices and actions are also made within the opportunities and constraints of time and place and influence transitions and turning points on future development (Elder, 2004); this idea is often referred to as the principle of agency, or the idea that individuals have the capacity to engage in thoughtful, proactive, and self-controlled processes that underlie choices (Clausen, 1991) but may be constrained by the options within their time and place. These elements of time, context, and meaning combine to create a "collection of individuals with shared history who interact within ever-changing social contexts

across ever increasing time and space" (Bengston & Allen 1993, p. 470), and this collection of individuals play an important role in human development as networks of shared relationships within social contexts. This idea is often referred to as the principle of "linked lives" (Elder, 2004). Linked lives, or networks of shared relationships are fostered within social contexts and are important because the actions of one person in a group can have resounding effects on other members of the group (Elder, 2004) directly, and through auxiliary members.

A more narrow focus of these ideas on adolescent development is highlighted in the concept of positive youth development. A key idea of positive youth development is that there are mutually beneficial relations between an individual and the contexts in which he/she lives (Jelicic, 2007). Lerner (2004) hypothesized that a young person who experienced positive youth development would not only make multifaceted contributions to self, family, and community, but would also be less likely to engage in risky/problem behaviors and would be set on a trajectory for an "idealized adulthood" marked by the ability to integrate and mutually reinforce contributions to self and to family and community and the institutions of civil society (Lerner, 2004). Aspects of life course theory, especially components regarding the importance of social contexts and shared relationships are highlighted in the positive youth development model as potential developmental assets. Developmental assets are resources that comprise the social and ecological "nutrients" for the growth of healthy youth (Benson et al., 2006). Social environments could be considered development assets when they provide things like social support that aid in the positive development of youth. These environments might include: other individuals or parents who spend high quantities of quality time with their

children, engaged teachers, and community mentors; institutions that include structured after-school programs, sport fields, libraries, and parks and hiking trials; collective activities like opportunities for youth and adults to work together on school committees, civic projects, or community organization; and access like availability of transportation to and from out-of-school time activities or safe streets and neighborhoods (Lerner, 2009). These developmental assets influence positive youth development through propagating what Lerner calls the "Five Cs" and include: competence, confidence, connection, character, and caring (Lerner, 2009; Roth, 2003).

Life course theory in combination with the positive youth development model will be the guiding theoretical framework of this study. This approach is an attempt to answer the call by Johnson (2011) in which she argues that adolescent research needs to consider adolescence within the life course paradigm, specifically, that adolescence should be understood as a developmental period in its own right with important transitions and turning points while also connecting its developmental processes to other life periods. By focusing on two life course concepts, transitions/turning points and shared relationships within social contexts, this study will go a step further by highlighting the importance of positive social environments (i.e., shared relationships and development assets) and developmental stages (i.e., turning points) *within* adolescence on adolescent outcomes. This approach will help to illuminate how social contexts as developmental assets affect outcomes within critical stages of adolescence thus aiding future research in its attempts to connect adolescence to early childhood and adulthood through developmental assets present during different stages of adolescence.

Previous research related to developmental assets or positive social environments and adolescence has found that social contexts such as neighborhoods, schools, families, and peer groups, which are supportive and encompass constructive behaviors positively affect adolescent outcomes (Eisenberg, 1997; Fabes, 1999; Hoyt, 2012). However, the way in which these contexts affect outcomes are complex due to the many ways that social environments influence each other through shared relationships (i.e., parents broker neighborhood resources) and more directly through either providing support (i.e., neighbor, teacher, parent, and friend support) or creating and sustaining behavior related to outcomes (Bond, 2005; Cantillon, 2006; Kumpfer, 1990). To further complicate this relationship, adolescent stages (early, middle, and late) may also influence how social environments impact outcomes due to changing cognitive, psychological, and social capacities that affect the salience of specific social environments on adolescents like friends versus family (Gentry, 2002). The following section elaborates on some of these developmental changes and, specifically, changes within adolescent stages (early, middle, and late) that may affect development.

Adolescence

Adolescence is a time in human growth that is characterized by great developmental change. The beginning of adolescence is marked by the dramatic biological changes of puberty and usually ends with a transition into an adult role like marriage, parenthood, completion of education, or entrance into the labor force (Smetana, 2006). Adolescence is also filled with many biological, cognitive, emotional, behavioral, and social changes (Collins et al., 2000). These changes are often not easy (Schulenberg

et al., 2003) and adolescent development has often been characterized by theorists as a period of "storm and stress" (Arnett, 1999).

Adolescence is also an important developmental stage bridging childhood and adulthood, and some scholars have further segmented the adolescent period into three distinct developmental/ transitional periods: early adolescence (ages 10–13), middle adolescence (ages 14–17), and late adolescence (18 until the early twenties; Smetana, 2006). These stages have been related to specific ages or critical periods of development due to unique differences in physical, cognitive, and social changes that occur during these stages of development. The following information on adolescent developmental changes comes from "Nurturing Children and Youth: A Developmental Guidebook" (Hurd, 2005, p. 52-54). Physical growth during early adolescence is characterized as a time of rapid physical growth and transitioning towards an adult body. Middle adolescents begin to fully develop their sexuality, while older adolescents tend to be fully physically developed, and have more assurance in their sexuality. Cognitive changes across adolescence include moving from concrete thinking to more abstract thinking in early adolescence, to deductive, inductive, and conceptual thinking in middle adolescence, to more openness to learning with the ability to see things from many points of view in older adolescence. Social developments for early adolescents include the importance of peers in everyday life and the enactment of racial, gender, and sexual identities. Middle adolescents have a need to belong and an increasing sense of self-worth. They may also conform less to peer groups than early adolescents. Late adolescent social development is characterized as having increasing self-reliance, developing a sense

of identity and intimacy, and while relationships with peers are still important, they are not as crucial to defining the "self" as in younger adolescents.

Peer groups are not the only social environments which change in salience over the course of adolescence (Gentry, 2002). For younger adolescents, the influence of several environments may work directly through parental relationships (Amato, 2000). However, as the child ages into and through adolescence and parents have less control over exposure to and consequently the effect of other social environments; friends and other social environments like neighborhoods may begin to have a greater impact on development (Leventhal, 2000). Furthermore, the impact of social environments on development not only depends on the type (friend vs. family) and developmental stage, but may also depend on the resources or elements available within a social environment.

Positive Social Environments

Changes that occur within each stage of adolescent development can often be characterized as stressful and difficult, and social environments may positively or adversely influence how this change affects developmental outcomes (Sameroff & Chandler, 1975). Adolescents' ability to deal with stressful changes often depends on the resources available within their environment. On the one hand, social environments can be understood as developmental assets which provide important nutrients for positive development (Lerner, 2009). For example, they can affect individuals going through stressful changes by providing support (Bliese, 2001) or by modeling positive behaviors that create a sense of self-worth (Hirsch, 1985). Access to various forms of support and a heightened sense of self-worth (fostered through positive behaviors) help adolescents

deal more successfully with stress (Dumont, 1999) and thus protect them from harmful outcomes like risky behaviors (Eisenberg et al. 1995) or poor mental health (Ensminger, 1992). On the other hand, social environments may adversely affect adolescent health by providing poor societal mores and norms that encourage risky behaviors (Millstein, 2002), or by lacking social support thus making adolescents more likely to engage in risky behaviors (Urberg, 1995) or experience poor mental outcomes (Bond, 2005).

Social environments that have been characterized as positive in nature, meaning that they provide confirmation of social identity, instrumental aid, and various forms of support (emotional, informational and appraisal) to group members (Cassel, 1976; Cobb, 1976; Cohen & Wills, 1985; House, 1981), have been shown to directly and indirectly protect against a multitude of negative behaviors (Hoyt, 2012) and health outcomes like depression (Bond, 2005). Direct aid and support from neighbors (Cantillon, 2006), teachers (Penner, 2005), families (Amato, 2000) and friends (Chen, 1997) help adolescents find ways of dealing with stress and overcoming obstacles that could lead to poor behavior and health outcomes (Dumont, 1999). Positive social environments may also affect adolescent health through influencing certain behaviors related to health outcomes. For example, positive social environments have been shown to protect against risky behaviors related to poor health outcomes (Hoyt, 2012), and to promote positive behaviors (Fabes, 1999) that also protect against poor health outcomes (Carlo, 1999).

The protective effects of positive social environments may stem from specific components of social capital and social support that make social environments a positive atmosphere. Positive social environments encompass several elements related to social capital (Cooper, 1999, p. 30-31) and social support (Cooper, 1999, p. 17-18). Putnam

(1996) defines social capital as the "features of social organizations such as networks, norms, and social trust that facilitate coordination and collaboration for mutual benefit" (p. 67). Positive social environments encompass features of social capital via informational support that is provided within the groups or networks that comprise a social environment (Cassel, 1976; Cobb, 1976; Cohen & Wills, 1985; House, 1981). Specifically, informational support may include a high level of trust and communication between members of a group or network that lead to positive outcomes (Cooper, 1999, p. 23). Positive social environments also encompass components of social support. There is a wide range of social support functions within positive social environments that positively affect outcomes, these include: helping to integrate the individual into wider society; giving practical help; supplying information; enabling the recipient to express his or her feelings; bolstering the individual's self-esteem; and moderating the health effects of stress (Cohen & Walls, 1985; Kessler, Price & Wortman, 1985). These features of social capital and social support are all captured within positive social environments in that positive social environments provide informational and other various kinds of aid and support (emotional and appraisal) to members of the group (Cassel, 1976; Cobb, 1976; Cohen & Wills, 1985; House, 1981).

Many studies have separately examined the positive effects of social capital and social support on developmental outcomes, and many have examined the separate effects of different levels of positive social environments on outcomes, i.e., family or friends (Carlo, 1999; Chen, 1997; Eberly & Montemayor, 1999; Gauze, 2008; Lenzi, 2011; Leventhal, 2000), but few studies have considered how multiple positive social environments made up of both social support and social capital might work in tandem.

Understanding how the influence of one positive social environment changes the effect of another positive social environment is important because communities, schools, family, and peer groups are all embedded within a greater social landscape that directly and indirectly affect adolescent behavior and health outcomes. This study examines four different levels of positive social environments: community, school, family, and friend that each incorporate elements of social support and social capital in a way that highlights the shared effects of each environment on the outcomes measured. No other study to my knowledge has taken this approach using these concepts. This analysis will reveal, for example, how parents may act as "advocates or brokers" for their children's receipt of community resources (Leventhal, 2000), essentially that the effect of neighborhood resources on adolescent outcomes may be more indirect (i.e., to operate through familial processes) than direct (Leventhal, 2000).

The influence of each positive social environment may also become more or less salient over the course of adolescence (Laible, 2003; Bauman, 1986) due to the different social, cognitive, and physical changes that occur. As individuals reach the later stages of adolescence and gain more independence and more developed thinking abilities (Hurd, 2005, p. 52), they will be more able to be their own advocates and brokers of resources, thereby decreasing the role of one social environment influence (i.e., family) on another (i.e., friends). For example, in early adolescence, children are still quite reliant on parents (Hurd, 2005, p. 52), and as they get older and gain more independence other environments like peer groups may play a larger role (Gentry, 2002). Also, boys and girls may experience the influence of any one positive social environment differently due to gender related differences in development (Rueger, 2010). For example, one study found

that identity development may be interrelated to relationship development for girls (Rueger, 2010) and this may affect how much effort is put into fostering relationships within social contexts and the their ability to provide support in a time of need.

The influence of any one positive social environment on adolescent behavior and health may also depend on the outcome of interest. For example, positive friend environments may play a larger role in behavioral outcomes when compared to other social environments because adolescent behaviors tend to occur in a group context and involve peer acceptance and status within the group (Jessor, 1991). In contrast, for health outcomes like depression, positive family environments may play an especially important role because adolescents may feel more comfortable in turning to their parents for support and encouragement when discussing issues related to stress, anxiety, and depression (Carlson et al., 2000). The following section will examine in further detail how several levels of positive social environments affect behavior and health outcomes.

Positive Social Environments, Adolescent Behavior, and Depression

The ease of movement through cognitive, emotional, behavioral, and social changes in adolescence is affected by social environments (Cook, 2002) and these changes often coincide with the development of positive and negative behaviors like prosocial (actions like helping, sharing, donating, cooperating, and volunteering; Fabes, 1999) and risky behaviors (i.e., substance use; Millstein, 1993). Positive social environments have been linked to the development of prosocial behavior (Carlo, 1999) through learning and action opportunities for adolescents to be prosocial in their own behavior while also providing various forms of support and aid that help sustain prosocial

behaviors (Carlo, 1999; Fabes, 1999). Specifically, positive social environments promote prosocial behaviors by providing information about generally desirable ways to behave, direct modeling of prosocial behavior, encouraging and directing appropriate prosocial behavior (Carlo, 1999), and providing activities that may lead to prosocial behavior (Eisenberg & Murphy, 1995).

Positive social environments have also been linked to a lower likelihood of participating in risky behaviors like cigarette and alcohol use (Cantillon, 2006; Kumpfer, 1990). One reason for this protective effect is that positive social environments provide social support, and social support helps individuals cope with the negative effects of stressful atmospheres (Bliese, 2001), making them less likely to use cigarettes and alcohol as a way of coping (Urberg, 1995). Positive social environments also discourage risky behaviors by providing positive societal mores and norms that discourage risky behaviors (Eisenberg et al. 1995) and by creating prosocial beliefs, values, and interests that are inconsistent with risky behaviors (Carlo, 2011).

Prosocial and risky behaviors are also related to adolescent depression (Alessandri, 2009; Veselskaa, 2009) and may be potential mechanisms between positive social environments and adolescent depression. Prosocial behavior may be linked to a lower likelihood of adolescent depression through an increased sense of self-worth. For example, prosocial behavior has been shown to promote social relationships that foster self-worth (Alessandri, 2009), and social relationships foster others' regard and nourish positive feelings related to self-worth (Musick, Herzog, & House, 1999). These features of prosocial behavior (positive social relationships and self-worth) guard against depression because of their relationship to positive thinking which corresponds to the

dimensions underlying life satisfaction and optimism about overcoming challenges (Caprara, 2005). Risky behaviors like cigarette and alcohol use have been linked to an increased risk of adolescent depression (Goodman, 2000; Veselskaa, 2009). Goodman (2000) suggests that according to previous research, smoking maybe related to depression through the effects that nicotine has on the central nervous system, while other researchers have only more vaguely found that risky behaviors are related to depression (Alessandri, 2009).

In conclusion, social environments, specifically positive social environments that provide support and aid during adolescence may directly affect adolescent outcomes by providing adolescents a positive way of dealing with stress and overcoming obstacles that might otherwise lead to depression (Dumont, 1999). Positive social environments may also affect adolescent depression through behavioral mechanisms like prosocial and risky behaviors. These patterns and associations are thought to vary over the course of adolescence due to developmental differences in biological, psychological, social, and cognitive changes (Smetana, 2006). Furthermore, due to gender differences in development related to social support use (i.e., girls use more social support than boys) (Rueger, 2010), these relationships are thought to vary across genders. The following chapters will address these ideas through an analysis of positive social environmental influences on prosocial and risky behaviors (cigarette and alcohol use), followed by an analysis of prosocial and risky behaviors as possible mechanisms of positive social environments and adolescent depressive symptoms, and finally a more detailed gender analysis of positive social environments and adolescent depressive symptoms.

The overall research objective of this study is to explore the influences of positive social environments, over the course of adolescence, on adolescent development outcomes (prosocial behavior, 30 day cigarette and alcohol use, and depressive symptoms). This research is important because it provides a nuanced examination of how several levels of social environments, specifically positive social environments, impact adolescent development over the course of adolescence. This knowledge will not only help scholars to develop a more comprehensive understanding of adolescent development via positive social environments, but will also help those interested in life course theory to link adolescence to developmental stages that precede it (early childhood) and follow it (adulthood) through positive social environments thus providing a more complete picture of the life course (Johnson, 2011). Furthermore, this research, through understanding positive social environmental influences during critical stages of development and differences across gender, will provide scholars, policy makers, and even public health officials with knowledge regarding environmental changes that will lead to positive youth development.

CHAPTER 2

POSITIVE SOCIAL ENVIRONMENTS AND ADOLESCENT BEHAVIOR OVER THE COURSE OF ADOLESCENCE

The transition from adolescence to early adulthood is a challenging time for many young people. However, those who engage in positive behaviors and avoid risky behavior are happier (Buchanan, 2008), and are less likely to participate in delinquent groups and activities (Cantillon, 2006), and are likely to be healthier adults (Brook, 2010; Carlo, 2011; Rew, 2005). Thus, understanding what contributes to the development of prosocial behavior and what protects against risky behavior is important to lifelong health.

Adolescence is a time in human growth that is characterized by great developmental change. The beginning of adolescence is marked by the dramatic biological changes of puberty and usually ends with a transition into an adult role like marriage, parenthood, completion of education, or entrance into the labor force (Smetana 2006). Adolescence is also filled with cognitive, emotional, behavioral, and social change (Collins et al., 2000). These changes are often not easy (Schulenberg et al, 2003) and adolescent development has often been characterized by theorists as a period of "storm and stress" (Arnett, 1999).

The ease of movement through these cognitive, emotional, behavioral, and social changes in adolescence is affected by social environments (Cook, 2002) and biological

systems (Smetana, 2006) and often coincides with the development of positive and negative behaviors. For the purposes of this study, positive behaviors include prosocial behaviors. A prosocial behavior is one that "benefits other people or society as a whole" (Twenge, Ciarocco, Baumeister, & Bartels, 2007) and is described as a voluntary action like helping, sharing, donating, cooperating, and volunteering that may be motivated by empathy and/or concern about the welfare of others (Sanstock, 2007), responding to requests (Eisenberg, 1981), or by a desire to gain respect and approval from others like parents or peers (Carlo, 2002). On the other hand, negative behaviors include risky behaviors such as 30 day cigarette and alcohol use (Millstein, 1994) and may be motivated by a low risk perception and/or perceived benefits of engaging in a particular risky behavior (Rew, p.15). Social environments play an important role in the development of these behaviors because they provide exposure to behavior role models and opportunities for learning and social interactions (Ensminger, 1992). Not only are these components of the social environment essential in behavior development, but the nature of these components is an important element to consider when assessing adolescent behavior (Blum, 2002).

Social environments that have been characterized as positive in nature mean that they provide confirmation of social identity, instrumental aid, and various forms of support (emotional, informational and appraisal) to group members (Cassel, 1974; Cobb, 1976; Cohen & Wills, 1985; House, 1981). Several levels of positive social environments that have been shown to protect against risky behaviors and promote prosocial behaviors include community/neighborhood, school, family, peer/friend (Blum, 2002; Carlo, 1999; Hoyt, 2012). This relationship between positive social environments and behavioral

outcomes may also depend on the age of the adolescent because of psychological, emotional, and social differences in development that occur over the course of adolescence (Berdnt, 1982; Pavis, 1998). For example, friends relative to family may become more important in adolescent development as the child ages (Gentry, 2002), these age related developments may mean that positive friend groups may have stronger effects on behavior outcomes in older adolescence than in younger adolescence. Understanding the relationship between positive social environments and behavior development over the course of adolescence is an important step in understanding health over the life course because behaviors in adolescence can have lasting effects on future social development and health (Brook, 2010; Carlo, 2011; Fabes, 1999; Hoyt, 2012; Rew, p. 11).

The importance of developmental stage (i.e., age) and relationships within social contexts to adolescent behavior development can be framed nicely within life course theory because of its ability to consider human development as embedded within social contexts over time. This study, using a life course framework, will examine the influence of positive social environments on adolescent behavior, specifically, prosocial behavior and risky behaviors, and how these effects differ over the course of adolescence

Life Course Theory and Adolescent Development

Life course theory provides a useful framework for understanding human development embedded within social contexts over time. In terms of adolescence, life course theory highlights the importance of timing and social environments in developmental outcomes. Specifically, it highlights how social environments may affect

adolescent behavior through shared relationships and how these effects may vary according to the age of the adolescent, i.e., stage of adolescence.

Life course timing is concerned with concepts of transitions and turning points on human development at crucial points during the life course (Elder, 2004). These could include things like puberty, the development of abstract thinking skills, and greater independence from parents (Nolen-Hoeksema, 2001). Timing, specifically, important turning points and transitions, can be segmented into three important developmental periods in adolescence: early adolescence (ages 10–13), middle adolescence (ages 14–17), and late adolescence (18 until the early twenties; Smetana, 2006). These stages are mostly defined by their differing social, cognitive, and physical changes (Smetana, 2006). Because of these differences, the behavioral outcomes that occur during adolescent developmental periods may be differentially influenced by social environments (Bauman, 1986; Laible, 2004). Examples of timing and social environment working in tandem are highlighted in research which has found that as an adolescent moves through adolescence the hub around which the adolescent's world revolves shifts from the family to friends (Gentry 2002). This shift means that he/she begins to rely less on their family for things like emotional and social support (i.e., positive social environments) and more on friends (Cooper 1985). Thus, the effect of positive social environments on adolescent behavior may depend on the type (i.e., neighbor, teacher, parent, peer) (Bauman, 1986; Laible, 2004) and may change as the adolescent moves through the different stages of adolescence (Cooper, 1985; Gentry, 2002).

The effects of these transitions and turning points on developmental outcomes are not only affected by their timing but also by the networks of shared relationships in an

individual's life. Networks of shared relationships are fostered within important social contexts and are crucial because the actions of one person in a group can have effects on other members of the group (Elder, 2004). For example, parents must act as "advocates or brokers" for their children's receipt of community resources (Leventhal, 2000), thus making the effect of neighborhood resources on adolescent outcomes likely to be more indirect by operating through familial processes and shared relationships among parents and neighbors (Leventhal, 2000). Another important element to shared relationships is that they provide exposure to behavior role models and to opportunities and constraints for learning and social interactions (Ensminger, 1992). These elements of social environments ultimately affect the development of prosocial and risky behaviors and are present in a range of environments like neighborhoods, schools, family, and friends (Carlo, 1999; Wen, 2009).

Positive Social Environments and Adolescent Behavior

Positive social environments have been linked to the development of prosocial behavior (Carlo, 1999) through learning and action opportunities for adolescents to be prosocial in their own behavior and through providing various forms of support and aid that help sustain prosocial behaviors (Carlo, 1999; Fabes, 1999). Specifically, positive social environments promote prosocial behaviors by providing information about generally desirable ways to behave, direct modeling of prosocial behavior, and encouraging and directing appropriate prosocial behavior (Carlo, 1999) and activities that may lead to prosocial behavior (Eisenberg & Murphy, 1995).

Positive social environments have also been linked to a lower likelihood of participating in risky behaviors like cigarette and alcohol use (Cantillon, 2006; Kumpfer, 1990). One reason for this protective effect is that positive social environments provide social support, and social support helps individuals cope with the negative effects of stressful atmospheres (like adolescence; Bliese, 2001), making them less likely to use cigarettes and alcohol as a coping method (Urberg, 1995). Positive social environments also discourage risky behaviors by providing positive societal mores and norms that discourage risky behaviors (Eisenberg et al. 1995) and by creating prosocial beliefs, values, and interests that are not consistent with ris

Not only does each positive social environment (community, school, family, friend) affect adolescent behavior outcomes, but each effect may be influenced by other positive social environments and consequently affect behavior outcomes (see Figure 1. for conceptual model). Communities, schools, family, and peer groups are all embedded within the greater social landscape that can directly and indirectly affect adolescent behavior outcomes. For example, parents must act as "advocates or brokers" for their children's receipt of community resources (Leventhal, 2000), thus making the influence of neighborhood resources on adolescent outcomes more indirect (i.e., to operate through familial processes) than direct (Leventhal, 2000). Also, parental authority over appropriate peer groups can also influence the effect of peer groups on adolescent behavior outcomes (Roth, 2000). Also, school environments, through providing a strong sense of social cohesion, can lead to more stable friend groups thus influencing behavior outcomes (Neckerman, 1996).

These direct and complex indirect effects of positive social environments on adolescent behavior may also differ depending on the age of the adolescent. For younger children the effects of environment on behaviors may work directly through parental behavior (Amato, 2000). However, as the child ages into and through adolescence and parents have less control over exposure to, and consequently less control over the influence of other social environments like friends, friends may begin to have a greater impact on behaviors (Leventhal, 2000). This change may happen because friends play an increasingly important role in adolescent development (Gentry, 2002). For example, as adolescents move through adolescence, they begin to identify with their peers and to develop moral judgment and values from their friends, this in turn affects behavior outcomes (Bishop, 1995)

In conclusion, positive social environments can affect adolescent behavior through providing learning and action opportunities for adolescents to be prosocial in their own behavior (Fabes, 1999) or through providing norms and values that are inconsistent with risky behaviors (Carlo, 2011). Positive social environments also provide various forms of support and aid that help sustain prosocial behaviors (Fabes, 1999) and/or negate risky behaviors (Bliese, 2001). Specifically, positive social environments which have been shown to influence adolescent prosocial and risky behavior development through providing instrumental aid and various forms of support are: neighborhoods (Brooks-Gunn, 2000; Cook, 2002), schools (Cook, 2002; Feldman & Matjasko, 2005), parents (Cantillon, 2006; Cook, 2002; Wen, 2009), and friends (Carlo, 1999; Cook, 2002).

As the guiding conceptual framework for this study, Figure 1. illustrates that social environments can influence adolescent behaviors through a variety a paths. Considering these relationships within the developmental stages of adolescence (early, middle, and late) further complicates how social environments affect behavior outcomes. In the sections that follow I will attempt to untangle some of the specific pathways linking social environments and adolescent behavior by providing examples of how each type of positive social environment (neighborhood, school, family, and peer) may potentially affect adolescent behavior and how these effects might vary over the course of adolescence.

Positive Community/Neighborhood Environment

The influence of positive neighborhood environment on prosocial and risky behaviors offers a clear example of how relationships and support within social contexts affect behavior outcomes through a variety of paths. This is highlighted in the indirect influence of neighborhood relations through parents and friends, and also in the more direct influence neighbors can have on adolescent behavior. Studies that examine these pathways, through neighborhood stability, have generally found that positive neighborhood environments directly encourage prosocial behavior and protect against risky behaviors. For example, Cantillon (2006) found that neighborhood stability characterized as having neighbors that are helpful and cooperative affected prosocial and risky behaviors through neighbors modeling prosocial behaviors which led to higher rates of prosocial activity and thus lower rates of risky behavior. Indirectly, perceived neighborhood stability also influenced parenting practices making them more

authoritative, which then lead to prosocial behaviors (Cantillon, 2006). Furthermore, Lenzi, (2011) found that perceived opportunities and social resources in a neighborhood were related to higher levels of adolescent prosocial behavior, and this relationship was partially mediated by perceived social support from friends. These findings highlight the direct and indirect influence of positive neighborhood environments on adolescent behavior, specifically prosocial and risky behavior through shaping other social contexts like parents and friends.

Adolescent stage is also an important concept to consider when looking at how positive neighborhood environments might affect adolescent behavior outcomes. The differences among stages may be related to the changing importance of family and friends over the course of adolescent development. For example, the influence of neighborhood environment on younger adolescents' problem behavior was stronger than that found among older adolescents (Loeber, 1993). This finding may be due to the salience of parental behavior on adolescent development, specifically, that parental behavior may be a primary mechanism through which neighborhood influences operate on adolescent outcomes because parents can regulate the exposure of the neighborhood for younger adolescents (Leventhal, 2000); whereas for older adolescents this may not be the case. The differential effects of neighborhoods on younger versus older adolescent outcomes could be due to changing influence of parents and peer groups where peer groups are more strongly related to older adolescents (Gentry, 2002) and may also be more strongly influenced by other contexts like school (Neckerman, 1996).

Positive School Environment

School environment provides another line of fruitful research which highlights the importance of positive social environments on adolescent prosocial and risky behavior development. Schools that create an atmosphere of closeness and support affect relationships (teacher and peer) that foster perspective taking (Carlo, 1999) and social support which then influence prosocial (Fabes, 1999) and risky behaviors (McBride, 1995; McNeely, 2004). Specifically, fostering perspective taking creates prosocial behavior (Carlo, 1999), while school social support provides positive bonding among students which then negates risky behavior (Mcbride, 1995). Also, schools that provide opportunities for extracurricular activities can promote prosocial development by allowing adolescents a time to cooperate and build levels of trust and support (Penner, 2005). One study found that students who participated in 4-H club activities that encourage cooperation and support reported higher levels of prosocial behavior than those who did not participate after a 1 year follow-up (Jelicic, 2007). Thus, schools which provide opportunities to participate in cooperation and helping activities and promote supportive atmospheres are likely to see a higher prevalence of students exhibiting prosocial behaviors (Fabes, 1999) and a lower likelihood of students engaging in risky behaviors (McNeely, 2004).

Schools not only affect behavior outcomes through fostering perspective taking and support, but they also influence behavior outcomes through shaping peer groups (Alexander, 2001; Neckerman, 1996) and protecting against deviant friends (Crosone, 2002). Specifically, one study found that school environments are important contexts for understanding peer group influences on adolescent cigarette smoking because adolescents

that had popular friends and attended a school with a high smoking prevalence were more likely to smoke than adolescents who had popular friends and attended a school with a lower smoking prevalence (Alexander, 2001) . This finding suggests that school environments shape peer group effects on adolescent outcomes. Not only do schools affect the likelihood of engaging in risky behaviors (Alexander, 2001; Picket, 2006) but when they promote positive and stable relationships among peers, they also affect positive behaviors (Crosone, 2002; Neckman, 1996).

The relationship between positive school environment and adolescent behavior does not seem to change over the course of adolescence. This may be due to the idea that a lot of time is spent within the school environment and the school environment will continually shape other important environments related to behavior outcomes. For example, a study on young children and middle adolescents found that the effect of classroom stability on stable peer relationships did not differ between age groups (Neckerman, 1996).

Positive Family Environments

Since families provide a major socialization environment for adolescents, it is important to understand how positive family environments may influence the development of adolescent prosocial and risky behaviors. There are several ways in which family environments can influence adolescent behavior; these include direct modeling, punishing inappropriate behavior, and providing social support (Carlo, 1999; Eisenberg & Murphy, 1995). Family environments that have strained parent-child relationships are less likely to provide supportive relationships and thus hinder the

development of prosocial behaviors (Fabes, 1999) and increase the likelihood of engaging in risky behaviors (Urberg, 1995). Family relationships that are strained and lack understanding and support can be stressful for both the parent and child (Wills, 1996), and when the adolescent becomes stressed without proper support to help them deal with the situation, they may turn to risky behaviors like cigarette and alcohol use to help them cope (Urberg, 2005). In contrast, positive family environments that foster perspective taking and helping behaviors (Eberly & Montemayor, 1999) can lead to prosocial development (Fabes, 1999) and avoidance of risky behaviors (Urberg, 2005).

Although parental relationships may have direct influences on behavior throughout adolescence (O'Koon, 1997), they may also have indirect effects on adolescent behavior through exposure to community resources (Leventhal, 2000) and influencing the quality of peer groups (Gauze, 2008). Because parents are "brokers" of adolescents' exposure to neighborhood resources, those whose parents allow more exposure to neighborhood resources are going to experience stronger neighborhood effects on adolescent behavior outcomes (Leventhal, 2000). Furthermore, research has shown that parents who have warm and supportive relationships with their adolescents are also likely to have adolescent children that have quality friendships (Gauze, 2008), which increases prosocial behavior (Fabes, 1999) and decreases risky behavior (Urberg, 2005). Thus, the effects of positive family environment may be indirectly related to adolescent behavior outcomes through exposure to neighborhood resources and the creation of quality friendships.

The effects of positive family environments on adolescent behavior are also likely to change over the course of adolescence. This may be related to the idea that as

adolescents get older they look to their peers for validation identity, and acceptance instead of their parents (Gentry, 2002). Also, during adolescence, parent–adolescent conflict tends to increase (Gentry, 2002), as conflict appears to be a necessary part of gaining independence from parents while learning new ways of staying connected to them (Steinberg, 2001); however, it may also mean that parents have less influence on adolescent behavior.

Positive Peer/Friend Environment

Positive friend environments are probably one of the most important elements in the development of prosocial behavior (Fabes, 1999) and risky behaviors (Urberg, 2005). When adolescents have friends that exhibit positive behaviors and provide various kinds of support, they are less likely to engage in risky behaviors (Berndt & Keefe, 1995) and more likely to exhibit prosocial behaviors themselves (Eisenberg & Fabes, 1998).

Positive friend environments are an important part of prosocial development (Larson & Richards, 1991) because they offer opportunities for helping, sharing, cooperation, and modeling behavior (Berndt & Keefe, 1995; Chen, 1997). For example, adolescents who have friends that display prosocial behaviors like cooperating or volunteering also tend to respond in a prosocial manner themselves (Carlo, 1999; Eisenberg & Fabes, 1998). Also, a longitudinal study conducted by Chen (1997) found that adolescents who had friends that participated in social activities characterized by cooperation and helping were also more likely to participate in these types of activities themselves.

Positive friend environments that promote helping and cooperative activities also create environments that make engaging in risky behaviors less likely (Berndt & Keefe, 1995). Carlo (1999) found that adolescents who participate in helping and cooperative activities together are less likely to engage in risky behaviors. This might be due to the idea that positive friend groups are more apt to endorse societal mores and norms (Eisenberg et al., 1995) which might make adolescents less likely to engage in antisocial behaviors because they are not consistent with their prosocial beliefs, values, and interests (Carlo, 2011).

Friend groups may also have differing effects on prosocial (Laible, 2004) and risky (Hoyt, 2012) behavior development throughout adolescence, i.e., from early to late adolescence. This may be due to friends becoming increasingly important throughout adolescent development (Gentry, 2002). Furthermore, aside from changing peer influences on behavior throughout adolescence, the nature of adolescent involvement with peer groups also changes over the course of adolescence. Younger adolescents typically have at least one primary peer group with whom they identify with and whose members are usually similar in many respects (Gentry, 2002; Savin-Williams & Berndt, 1990). During this time, conformity and concerns about acceptance are at their peak, and preoccupation with how their peers view them can become all consuming to adolescents (Gentry, 2002). The intense desire to belong can influence young adolescents to go along with activities in which they would otherwise not engage (Gentry, 2002; Miucucci, 1998; Santrock, 2001). However, as adolescents develop, friends become less important to identity (Hurd, 2005) and thus may have less influence over behaviors.

Current Study

This study, adopting a contextualized view of the life course, will examine the effects of positive social environments on behavior outcomes during adolescence. Aim one was to i*nvestigate the main effects of positive community, school, family, and peer environments on prosocial and risky behaviors.* This study will explore how positive social environments affect adolescent behavior. Based on previous literature, positive social environments affect both adolescent prosocial behavior and risky health behaviors (Cantillon, 2006; Carlo, 1999). Furthermore, because multiple positive social environments might work in tandem (Blum, 2002), and are all embedded within a greater social landscape that can directly and indirectly affect adolescent behavior (Blum, 2002; Carlo, 1999; Hoyt, 2012), it is possible that each positive environment may mediate the relationship between other positive environments and behavior outcomes (Blum, 2002). The goal of this research aim is to determine the effects of each positive social environment together as well separately on adolescent behavior while highlighting those with the largest effects.

Aim two was to e*xamine whether the role of positive social environments on prosocial and risky behaviors differ by grade i.e., across the adolescent stages of development (early, middle, late).* The goal of this research aim is to determine if the relationship between positive social environments on adolescent behavior differs over the course of adolescence given the unique developmental changes that also occur (Smetana, 2006).

On a side note, some research has found that exhibiting prosocial behaviors lowers the likelihood of participating in risky behaviors (Hoyt, 2012). However, this

study will not assess this relationship between prosocial and risky behaviors because the focus is on how positive social environments affect these behaviors.

Limits of Previous Research

Research on the development of adolescent behavior has fallen short on account of the majority of attention has been given to the problematic outcomes of adolescence (Ketterlinus & Lamb, 1994; Pipher, 1994), it also lacks an integrated analyses of social processes and the environments they are embedded in for understanding adolescent development (Carlo, 1999). A recent report by National Research Council and Institute of Medicine (Adolescent Health Services) has called for a shift in research on adolescent emotional and behavior disorders from a myopic focus on health and negative experiences to one that promotes competencies and healthy functioning. This study accomplishes this task by examining the effects of positive social environments on behavioral outcomes and will provide insight into the positive experiences that promote competencies and healthy functioning and protects against problematic behaviors.

Also, little research has examined how positive social environments might differentially influence prosocial behavior in comparison to risky behaviors. This distinction is important because the nature of the behavior may dictate the influence of the positive social environment. One study that examined the effect of friend group characteristics on behavior outcomes found that adolescent substance use was related to friend's substance use and deviance, while prosocial behavior was only negatively related to friend violence (Prinstein, 2000). Essentially, the factors that were related to prosocial behavior were different from those related to risky behaviors.

Although the study of relationships within social contexts has shed light on understanding adolescent behavior development, more research is needed on how these relationships may differ according to different developmental periods over the course of adolescence. This kind of research is important to understanding adolescence in general due to the constantly changing nature of this developmental stage (Smetana, 2006).

In order to extend previous research this study has examined the relationship of four major positive social environments (community, school, family, friend), concurrently and separately, on prosocial and risky behaviors over the course of adolescence. The findings of this study are important because they will highlight which positive social environments have the greatest influence in promoting prosocial behavior and protecting against risky behaviors. Furthermore, these analyses will provide insight into how positive social environments influence adolescent behaviors and how these relationships vary according to adolescent stage (i.e., grade). Overall, these findings contribute to adolescent research by highlighting important and differential effects of positive social environments on behavior outcomes within specific adolescent developmental stages.

Methods

Data

Data for this study came from the Utah Prevention Needs Assessment (PNA) 2011 survey, and was collected by the Utah Human Services Division of Substance Abuse and Mental Health. The PNA is a cross-sectional survey that is administered every other year and began in 2009. The PNA is primarily administered to students in grades 6,

8, 10, and 12. The PNA is also administered to some 7th, 9th, and 11th graders. The decision to administer the survey to 7th, 9th, and 11th graders is made individually by each school and thus, makes these data not generalizable for those grades. Thus, this analysis focused only on the samples from grades 6, 8, 10, and 12.

Aside from the advantage of its size, the PNA uses sampling techniques and weights that make it representative of students in Utah from middle school to high school. The PNA uses a multistage area probability sample design and sampling weights provided for 2011. The first stage of sampling sampled schools (n=455) within all school districts in Utah. The second stage consisted of a random sample of classes within schools.

Preparation of the data included assigning students an honesty score and those who were "dishonest" in answering questions on the survey were not used in any of the analyses. Students with an honesty of 0 were deemed "dishonest" according to at least one of the following five criteria: 1) used drugs (not including alcohol or tobacco) on more than 120 occasions in the past 30 days, 2) reported using a fictitious drug, 3) reported that they were "not honest at all" in completing the questionnaire, 4) marked more 30-day use for a substance than their lifetime use more than one time, or 5) their age and grade did not match, such as a student 19 years of age who marked grade 6. Only the honest students in grades 6, 8, 10, and 12 were used to weight the data, about 3% of the data were not weighted because of "dishonest" students. The weighting variable is based on school, gender, and grade.

This study used data from 2011 and included a representative sample of Utah 6th, 8th, 10th, 12th graders (N= 48758). There is one major limitation in this dataset. First,

due to reasons of efficiency, only half the sampled students in 2011 received a full version of the survey which assessed the variables used to measure the full array of positive social environments; the other half received a form that assessed only a portion of the variables used to measure positive social environments (*n*=22,091). Thus, this study consisted of only half the records to ensure that only those who were surveyed for all positive social environments were included in the analysis (*n*=22,091). This approach did not hinder analyses on prosocial behavior, cigarette use, or alcohol use because of the random sampling of the two forms and because there was still a large sample to be analyzed. The full set of observations for 2011 was 48,758, thus about 50% of observations were lost due to this sampling design. The strengths of this data set included its large numbers which allowed for a refined analysis across grades, the representative nature of Utah students, and the differentiation between "honest" and "dishonest" respondents.

Measures

Dependent variables. Prosocial behavior was created from three different questions that tap into constructs of prosocial behavior, and follows Arthur's (2002) approach. These questions are: "How many times in the past (12 months) have you: "participated in clubs, organizations and school activities," "done extra work on your own for school," "volunteered to do community service." The response options to these questions were "Never, 1 or 2 times, 3-5, 6-9, 10-19, 20-29, 30-39, 40+." The response options were coded as numbers 1-8 with "Never" given the value of 1 and "40+" given the value of 8. The responses to the three questions were sampled to create a numerical

value of prosocial behavior. The theoretical range of the scale was 1 to 24, and the observed range was 3 to 24.

The validity of this construct was tested using factor analysis techniques. The factor analysis found that the variables used to create the prosocial construct loaded onto just one factor with good validity. The measure of sampling adequacy (MSA) was above .70. The variables also had a good correlation with a Cronbach alpha of .72.

Those persons who reported "never" to all three items (i.e., had a score of 3) were assigned a value of 0, meaning that they exhibited no prosocial behavior during the past 12 months; those respondents who reported doing at least one behavior at least once during the past 12 months (i.e., had a score of at least 4) were coded as 1, meaning that they exhibited some type of prosocial behavior at least once during the past 12 months. This dichotomous coding is a data reduction technique that admittedly loses a lot of information about the frequency of repeat prosocial behaviors (i.e., it does not differentiate those students who do a lot versus a little prosocial behavior); however, it efficiently identifies those students who have prosocial behaviors versus those who have no prosocial behaviors. This latter distinction will highlight how change in the positive social environment can affect an adolescents' likelihood of exhibiting *any* prosocial behavior versus not. This distinction is important because regardless of how much prosocial behavior an adolescent exhibits, research has found that any amount of prosocial behavior can positively affect health behavior outcomes (Monahan, 2011).

Risky behaviors were measured with two common variables; cigarette and alcohol use. Cigarette use was created from the question "During the past 30 days on how many days did you smoke cigarettes?" The response options were: "0 days," "1 or 2 days," "3

to 5 days," "6 to 9 days," "10 to 19 days," "20 to 29 days," or "All 30 days." The response options were coded as 0 and 1. Zero was given to those who responded with "0 days" and 1 was given to those who reported some cigarette use over the last 30 days, so those who responded with "1 or 2 days," "3 to 5 days," "6 to 9 days," "10 to 19 days," "20 to 29 days" or "All 30 days." This dichotomous coding does lose some information about cigarette use (i.e., it does not differentiate those students who smoke on a regular basis and those who do not); however, it efficiently identifies those students who smoke some *at all* versus those who do not. This latter distinction is important to this study because positive social environments are important protective factors that guard against adolescent cigarette use (Carlo, 2011); and these protective factors are important even for one time use of cigarettes. One time cigarette use can be detrimental to health outcomes because those who smoke even once can become addicted and continue down a trajectory of continued use (University of Massachusetts Medical School, 2007).

Alcohol use was created from the question "On how many occasions have you had beer, wine, or hard liquor during the past 30 days?" The response options were: "0 days," "1 or 2," "3 to 5," "6 to 9," "10 to 19," "20 to 29" or "40+" occasions. The response options were coded as 0 and 1. Zero was given to those who responded with "0 occasions" and 1 was given to those who reported some alcohol use over the 30 days, so those who responded with "1 or 2 days," "3 to 5 days," "6 to 9 days," "10 to 19 days," "20 to 29 days" or "40+" occasions. This dichotomous coding is a data reduction technique that admittedly loses a lot of information about alcohol use (i.e., it does not differentiate those students who drink on a regular basis and those who do not); however, it efficiently identifies those students who drink some *at all* versus those who do not.

This latter distinction is important to this study because positive social environments have been shown to be important protective factors that guard adolescent regular use of alcohol (Carlo, 2011) and these protective factors may be important for guarding against even one time use of alcohol.

Independent variables. This study draws on a multidimensional approach to measuring the social contexts to which each adolescent are exposed. All variables focus on whether the social contexts provide *positive* support or influence; and each variable measures a different domain of social context, including neighborhood, family, school, and peer environments. Each of the positive social environments' validity was tested using factor analysis techniques. Factor analysis found that the variables used to create each positive social construct loaded onto just one factor with good validity (MSA was above .77). This measurement approach was derived from Arthur, (2002) who used the same questions to create valid constructs of positive social environments.

Positive community context was created from three different questions that tap into positive social attributes of a neighborhood. The following questions using child appropriate responses of "NO! (completely disagree), no (disagree), yes (agree), YES! (completely agree)" are: "My neighbors notice when I do a good job," "People in my neighborhood are proud when I do well," " People in my neighborhood encourage me to do my best" with a response of "NO! (completely disagree), no (disagree), yes (agree), YES! (completely agree)." The response options to the questions were given values of 1-4 with "NO!" or completely disagree receiving a value of 1 and "YES!" or completely agree receiving a value of 4. The answers from each of the questions were added together to create a linear variable of positive community environment. This construct had a range

of 3 to 12 with 3 meaning that they reported “NO!” on all three questions and 12 meaning that they reported a four or “YES!” on all three questions. The mean was 7.13 and was normally distributed. The Cronbach alpha for the five items was .88.

Positive school context was created from five different questions that tap into the potential positive influence of schools. These questions are: “In my school, students have lots of chances to help decide things like class activities,” “There are lots of chances for students in my school to talk with a teacher one-on-one,” “Teachers ask me to work on special classroom project,” “I have lots of chances to be a part of class discussions or activities,” and “I have lots of chances to get involved in school activities.” The response to these questions were: “NO!,” “ no,” “yes,” or “YES!” Each response was given a value of 1, 2, 3, or 4, with “NO!” given the value of 1 and “YES!” given the value of 4. The answers from each of the questions were added together to create a linear variable of positive school environment, with a range of 3 to 20. Higher numbers indicate higher levels of positive influence from school environments. The mean was 14.71 and was normally distributed. Cronbach alpha for the five items was .65.

Positive family context was created from three different questions that tap into the potential positive influence of families. These questions are: “My parents give me lots of chances to do fun things with them,” “My parents ask me what I think before most family decisions affecting me are made,” “If I had a personal problem, I could ask my mom or dad for help.” The response to these questions were: “NO!,” “no,” “yes,” “YES!” Each response were given a value of 1-4, with “NO!” given the value of 1 and “YES!” given the value of 4. The answer from each of the questions were added together to create a linear variable of positive family environment with a range of 3 to 12. Higher numbers

indicate a greater level of positive family influence. The mean was 9.23 and was normally distributed. The Cronbach alpha for the 3 items was .99.

Positive peer context was created from five different questions that tap into the positive influence friends may provide. These questions are: "Think of your four best friends (the friends you feel closest to), in the past year (12 months), how many of your best friends have:" "participated in clubs, organizations and activities at school," "made the commitment to stay drug-free," "tried to do well in school," "liked school," "regularly attended religious services?" The response to these questions "0-4 friends" with "0 friends" being given a value of 1 and "4 friends" being given the value of 5. The answer from each of the questions were added together to create a linear variable of positive friend environment with a range of 5 to 20. Higher numbers indicate a greater level of positive peer influence. The mean was 18.66 and was normally distributed. The Cronbach alpha for the four items was .74.

Control variables. Control variables include demographic variables. These variables are sex (male=reference, female), race (American Indian, Asian, African American, Hispanic, Pacific Islander, White=reference), parental education (Some grade school/less/some high school =reference, Completed high school/ some college, Completed college/graduate or professional), and student grade (6th=reference, 8th, 10th, 12th).

Grade was used as a substitute for adolescent stage and age group (age is generally used to measure aspects of developmental change in adolescence). This substitution provides a more reliable way of analyzing the data because of the sampling techniques used. This substitution works because each grade has a general age range that

matches closely to the various stages within adolescence. In the 2011 PNA data, for 6th graders (i.e., early adolescence) 99% were between 11 and 12 years old. For 8th graders (i.e., early to middle adolescence) 99% were between the ages of 13-14 years old. For 10th graders (i.e., middle to late adolescence) 99% were between the ages of 15 and 16 years old. For 12th graders (i.e., late adolescence) 99% were between 17 and 19 years old.

Research Design and Analyses

This study used SAS PROC SURVEYLOGISTIC command to adjust for the complex survey sample design, including designs with stratification, clustering, and weighting, into the analysis. The SURVEYLOGISTIC procedure uses discrete response survey data and fits linear logistic regression models while incorporating the sample design into the analysis. This tool creates design-based variances using the Taylor series linearization method. When there are primary sampling units (PSUs), or clusters (classrooms), as in this sample design, the procedure estimates the variance from the variation among the PSUs thus accounting for the complex design of the study.

After listwise deletion of all variables, the analytic sample used here is 17, 9226 observations; this represents 27% of the original sample from the 2011 Utah PNA (N= 48758). Data that are missing from key analysis variables were dropped. There was slightly higher missing data on prosocial behavior for those that reported having positive social communities, schools, families, and friends when compared to those who did not. This does not present any problems, and if anything, adds a more conservative bias to the

analyses. This sample continues to be representative of adolescents in Utah because selection was systematically done according to the survey methodology.

Aims one and two were tested using 2011 Utah PNA data. I first looked at the bi-variate effects of each positive social environment on prosocial behavior, cigarette, and alcohol use, then using a hierarchical approach I assessed how the effect of each positive social environment on prosocial behavior, cigarette, and alcohol use (while controlling for sex, race, and parental education) changed with the addition of a new positive social environmental variable.

Based on the findings of previous research, I started with the most distal positive social environments (neighborhood) which typically have smaller effects and moved towards the more proximal positives social environments (friends) which typically have larger effects (Cooper, 1985). These findings drove the method for starting with positive community environment in the model followed by the addition of school, family, and then peer group.

Also, based on previous research, which highlights the importance of developmental change during adolescence (Gentry, 2002), possible interaction effects between grade and each positive social environment on behavior outcomes may have been significant and thus were examined. Thus, I examined the effect of each positive social environment variable in an interaction with grade on prosocial behavior, cigarette, and alcohol use.

Results

Tables 1. and 2. show the distribution of the sample within each variable. The counts are unweighted and the percents are weighted in order to highlight how many observations were dropped from the analytic subsample due to missing observations. When data have missing values on key weighting variables then they are not given a weight and as a result are dropped from the analytic sample. Only about 3% of the analytic sample was dropped because of missing weights.

As shown in Table 1., about 73% of the sample was White with Hispanics being the next most prevalent group at 12%. About 60% of the sample had parents who at least graduated from college and about 34% who had parents who at least completed high school. Males comprised about 52% of the sample and females about 48%. Additional descriptive statistics comparing the characteristics of the subsamples are located below in Table 1.

As shown in Table 2., about 63% of the sample reported having some level of prosocial behavior. Only about 4% reported using cigarettes and about 8% used alcohol in the last 30 days. While the reports of prosocial behaviors did not vary much between 6th, 8th, 10th and 12th grades, the prevalence of cigarette and alcohol use varied much more over 6th, 8th, 10th and 12th grades. For example, only about 1% of 6th graders reported using cigarettes over the last 30 days, whereas about 7% of 12th graders reported using cigarettes over the past 30 days. The same pattern can be seen with alcohol use. About 1% of 6th graders reported using alcohol over the last 30 days, whereas about 16% of 12th graders reported using alcohol over the past 30 days.

Also, shown in Table 2., the overall mean for positive community environment was about 7.13 on a scale of 3-12. Tenth graders reported the lowest mean of 6.97 while 6th graders reported the highest mean at 7.40. The overall mean for positive school environment was 14.72 on a scale of 5-20, with 6th graders reporting the highest mean of 14.91 and 8th graders reporting the lowest mean at 14.47. The overall mean for positive family environment was 9.23 on a scale of 3-12. Sixth graders had the highest mean at 9.80 and 12th graders with the lowest mean of 8.92. The overall mean for positive peer environment was 18.67 on a scale of 5-25, with 12th graders reporting the lowest mean at 18.13 and 6th graders reporting the highest mean at 19.65.

Prosocial Behavior

Before model building, prosocial behavior was regressed in a bi-variate model with each positive social environment variable. Each positive social environment was significantly (p<.0001) related to prosocial behavior. As shown in Table 3., the odds ratios for positive community, school, family, and peer environments were 1.28, 1.21, 1.25, and 1.22, respectively. Table 3. also presents estimates from multivariate logistic regression models showing the likelihood of prosocial behavior. Overall, these results indicate that each positive social environment has a main positive effect on prosocial behavior while controlling for the effect of other positive social environments, sex, grade, parental education, and race. Through a series of nested models, the general pattern showed that with the addition of each new positive social environment (Models 1-4), the effect of other positive social environment variables on prosocial behavior was reduced, but not completely, suggesting that each positive social environment shares variance in

the prosocial behavior but also has a continued main effect on prosocial behavior. Relative to the other domains, positive peer environment had the largest relative effect size on prosocial behavior. A one unit increase in positive peer environment increased the odds of exhibiting prosocial behavior by 1.18 (1.16-1.19). The next largest effect was positive community environment (OR: 1.09, CI: 1.07-1.12) followed by positive school environment (OR: 1.06, CI: 1.04-1.09) and family environment (OR: 1.05, CI: 1.03-1.08). Overall, the results of these nested models suggest that positive peer environment is an important main factor for understanding prosocial behavior while also considering the effects other positive social environments.

In the full model, females were more likely than males to exhibit prosocial behavior: females had 1.28 (1.17-1.41) higher odds of reporting prosocial behaviors compared to males in Model 4. Those with parents who had some college or graduate or professional schooling were more likely to exhibit prosocial behavior when compared to those whose parents only had some grade school in Model 4, 1.24 (1.01-1.53), 1.69 (1.37-2.08), respectively. Hispanics had a 21% lower odd of having prosocial behavior when compared to Whites in the final model. These results suggest that prosocial behavior is not only affected by differences in positive social environments but also by factors related to age and gender. Eighth, 10th, and 12th graders were 1.37 (1.20-1.56), 1.31 (1.14-1.49), and 1.61 (1.40-1.86) times more likely than 6th graders to exhibit prosocial behavior, respectively. No interaction effects were found when grade*positive social environment were entered into the model.

Cigarette Use

Cigarette use was regressed in a bi-variate model with each positive social environment variable. Each positive social environment was significantly (p<.0001) related to cigarette use and had protective effects against cigarette use. As shown in Table 4., the odds ratios for positive community, school, family, and peer environments were .76, .84, .76, and .79, respectively.

Table 4. represents estimates from multivariate logistic regression models predicting the likelihood of 30 day cigarette use. Overall, these results indicated that each positive social environment, except positive school environment, had a main protective effect on 30 day cigarette use while controlling for all other positive social environments, sex, grade, parental education, and race.

The general pattern across the four models showed that with the addition of each new positive social environment, the main effects of other positive social environment variables on 30 day cigarette use were reduced. However, there was an exception in Model 4. In Model 4, positive peer environment was significant and completely removed the effect of positive school environment.

In the full model (Model 4), positive peer environment had the largest relative protective effect size on cigarette use at .83 (.81-.84), in other words, there was a 17% lower odds of cigarette use for a one unit increase positive peer environment. The next largest protective effect was positive family environment (OR: .92, CI: .87-.96) followed by positive community environment (OR: .92, CI: .87-.96) and school environment was insignificant (OR: 1.00, CI: .95-1.05). All positive social contexts had main protective effects on 30 day cigarette use in the full model except for positive school environment

which may somehow play an important role in the formation of peer groups that affect cigarette use. Interestingly, sex was not a significant predictor in any of the models suggesting that when looking at risky behaviors like cigarette use, social environments are important control factors for sex effects on the likelihood of cigarette use.

Parental education showed that those who had parents with a graduate or professional degree were 37% less likely to smoke when compared to those who had parents with some grade or some high school. Hispanics were 43% less likely to use cigarettes and Pacific Islanders were 2.75 times more likely to use cigarettes when compared to Whites. The largest effect in full model was grade. The general pattern showed that when compared to 6th graders, 8th (OR: 2.98, CI: 1.72-5.17), 10th (OR: 5.94, CI: 3.47-10.16), and 12th graders (OR: 7.86, CI: 4.61-13.41) were progressively more likely to use cigarettes in the last 30 days, suggesting that 30 day cigarette use is not only affected by differences in positive social environments but also by age. The grade effect was reduced by the addition of each positive social environment variable in Models 1-4.

An interaction effect between grade and positive social environment on cigarette use was evident. Specifically, interaction effects were found between grade and positive family ($p<.01$) and community ($p<.04$) environments. To fully understand the differential effects of positive social environment on cigarette use by grades, the full model was stratified by grade. See Figure 2. for results.

In a model controlling for all positive social environments, parental education, sex, and race (Figure 2.), 12th graders had about an 11% decrease in the odds of cigarette use for a one unit increase in positive community environment. This effect is significantly

different from all other grades where positive community environment did not have an effect on the likelihood of cigarette use.

A one unit increase in positive family environment meant that 6th graders had a 30% decrease in the odds of cigarette use while 8th graders had a 15% decrease. Positive family environment did not have a significant effect on cigarette use in 10th or 12th graders. These results suggested that specific positive social environments have differential effects on adolescent 30 day cigarette use and these relationships are sensitive to developmental stages within adolescence.

Alcohol Use

Like the other models, alcohol use was first regressed in a bi-variate model with each positive social environment variable. Each positive social environment was significantly (p<.0001) related to alcohol use, indicating that the presence of more positive social influences, the less likely an adolescent engaged in alcohol behaviors. As shown in Table 5., the odds ratios for positive community, school, family, and friend environments were .75, .87, .77, and .81, respectively.

Table 5. represents estimates from multivariate logistic regression models predicting 30 day alcohol use and showed that positive social environments had main protective effects against alcohol use while controlling for sex, grade, parental education, and race. Overall, through a series of nested models, the general pattern of Models 1-4 showed that each positive social environment reduced the effect of the other positive social environments on 30 day alcohol use. However, there was an exception in Model 4. In Model 4, positive peer environment completely reduced the effect of positive school

environment on 30 day alcohol use to insignificant. These results suggest that school environments may somehow work through an influence on peer groups which then affect alcohol use.

In the full model (Model 4), positive peer environment had the largest relative protective effect size on alcohol use at .84 (.83-.85). There was a 16% lower odds of alcohol use for every one unit increase positive peer environment. The next largest protective effect was positive community environment (OR: .89, CI: .86-.92) followed by positive family environment (OR: .94, CI: .91-.98) and positive school environment was insignificant (OR: 1.03, CI: .99-.1.07).

Again, as in cigarette use, sex was insignificant in the all the models controlling for positive social environments. Those with parents who had some college or graduate/professional school had about 25% and 38% lower odds of alcohol use over the last 30 days when compared to those with parents who had some grade school/some high school, respectively. Pacific Islanders were 1.67 to use alcohol when compared to Whites. The largest effect in full model was grade. The general pattern showed that when compared to 6th graders, 8th (OR: 3.07, CI: 2.05-4.59), 10th (OR: 6.91, CI: 4.68-10.20), and 12th graders (OR: 10.93, CI: 7.45-16.04) were progressively more likely to drink alcohol in the last 30 days. The grade effect was somewhat reduced by the addition of each positive social environment variable in Models 1-4.

Interaction effects were found only between grade and positive family environment. The influence of positive social environments on alcohol use only differed by grade for positive family environment. To fully understand the differential effects of

positive family environment on alcohol use among grades, the full model was stratified by grade. See Figure 3. for results.

In a model controlling for all other positive social environments, parental education, sex, and race, 6th graders had about an 18% lower odds of alcohol use for a one unit increase in positive family environment while 8th graders and 10th graders had about 14% and 6% lower odds of alcohol use, respectively. These effects were significantly different from 12th graders where positive family environment did not have an effect on the likelihood of alcohol use. Positive family environments have differential effects on adolescent 30 day alcohol use and these relationships were sensitive to developmental stages within adolescence.

Discussion

Using a representative sample of adolescents in Utah obtained from the Utah Prevention Needs Assessment, this analysis explored the influence of positive social environments on adolescent behaviors over the course of adolescence. In particular, the analyses explored whether those adolescents who reported positive social environments at the community, school, family, and peer group level, were more likely to exhibit prosocial behavior and less likely to use cigarettes and alcohol than those who reported lower levels of positive social environments. These effects were then measured separately for each grade in order to focus on how these relationships varied over the course of adolescence.

In sum, having elevated levels of all positive social environments (community, school, family and peer), especially positive peer environments, meant that adolescents

were more likely to exhibit prosocial behavior and were less likely to use cigarettes and alcohol. Positive social environments may influence behaviors through a variety of ways such as providing various forms of aid and support (Bliese, 2001) and providing opportunities and constraints for positive behavior learning and positive social interactions (Ensminger, 1992) through exposure to role models (Hirsch, 1985).

Peer environments generally had greater direct effects on behavior than environments that included adults like teachers, parents, and neighbors, and this may be related to the idea that peers are the platform for companionship, social comparison, intimacy, and social and emotional support (Bond, 2002, Cooper, 1985). However, although positive peer environments had relatively larger direct effects on behaviors when compared to other positive social environments, positive social environments may affect behaviors indirectly through influencing the formation of peer groups (Alexander, 2001; Leventhal, 2000; Neckerman, 1996). For example, parental authority over appropriate peer groups can influence the effect of peer groups on adolescent behavior outcomes (Roth, 2000), while school environments, through providing a strong sense of social cohesion, can lead to more stable friend groups (Neckerman, 1996).

The effects of positive social environments on behaviors varied slightly according to the behavior. For example, positive school environment affected prosocial behavior but did not affect either alcohol or cigarette use once peer environments were considered. Positive social environments also differentially affected risky behaviors depending on the behavior. Positive peer environments had the largest protective effect for cigarette use, whereas for alcohol use, positive community environment had the largest protective effect. These findings are not surprising given the somewhat different motivations

surrounding these two behaviors. For example, one study found that adolescents, who drink, "drink for fun," whereas adolescents who smoked did so because they were surrounded by others who smoke (Simantov, 2000). Thus, because of the differing nature of these behaviors, they may be differentially affected by specific positive social environments.

The relationship between positive social environments and risky behaviors is not only sensitive to the risky behavior being assessed, but it is also sensitive to the developmental stage of adolescence. Positive family environments only decreased the likelihood of cigarette use on 6th and 8th graders and positive community environments only decreased the likelihood of cigarette use for 12th graders. Furthermore, positive family environment only reduced the likelihood of alcohol use for 6th and 8th graders. These findings suggest that the effect of positive social environment on risky behavior depends on the adolescent's developmental stage (Fisher, 1986; Laible, 2004). For example, as the adolescent ages, they become more independent (Gentry, 2002) and this means that they may be influenced more by social environments outside the home because they are trying to develop a sense of "self" aside from their parents (Steinberg, 2001) and even from primary friend groups (Gentry, 2002; Savin-Williams & Berndt, 1990). The differences in the influences of social environments over the course of adolescence are likely due to differences in social, emotional, and cognitive development found at different stages within adolescence (Smetana, 2006). Finally, the lack of interaction effects between positive social environment and grade for prosocial behaviors and the presence of these interactions for risky behaviors could be related to the idea that the social, cognitive, or physical changes in adolescence are less important to prosocial

behavior development, which might develop during childhood (Eisenberg, 1991), whereas developmental changes during adolescence are more strongly related to the development of risky behaviors.

These findings add to current research on school environments and behavior outcomes by highlighting the importance of peer or friend groups in this relationship. The lack of effect of positive school environment on alcohol and cigarette use runs counter to the findings of McNeely (2004). He found that schools which exhibit positive social environments, measured as school connectedness such as teacher support and social belonging, had a lower likelihood of students engaging in risky behaviors. These contrasting findings may be due to McNeely's lack of positive friend group as a control for cigarette and alcohol use. Peer group influence is an important element to be considered in adolescent behavior research, especially in relation to other social contexts. Peer groups are important to this line of research because of the developmental changes which occur in adolescence that affect the salience of friend environments on development (Gentry, 2002) and the effects that other social environments may have on the development of peer groups (Alexander, 2001; Leventhal, 2000; Neckerman, 1996). This study extends McNeely's research by highlighting the importance of adjusting for positive peer environments when examining the relationship between positive school environments and risky behaviors. Such findings are important to research which examines the effectiveness of school interventions.

Overall, these findings support previous research which found that friends when compared to parents have a stronger influence on adolescent behavior (Gentry, 2002). These findings extend previous research by highlighting the effects of positive social

environments on adolescent behavior, especially peer groups, while also considering the complex relationships of other positive social environments. These results add to previous research by highlighting how the effects of positive social environments on behaviors change according to the behavior and stage of adolescence.

Limitations

Several limitations in this study are noteworthy. In terms of data, all outcomes, prosocial behavior, cigarette, and alcohol use were self-reported. Self-reported data create the potential for errors in internal validity. However, the scale that was used for prosocial behavior in these analyses had been documented in its ability to actually measure prosocial behaviors (Arthur, 2002). Also, the PNA honesty score as an elimination technique helps get rid of extraneous bias in the data.

Due to the cross-sectional nature of this study, causal inferences are limited in the findings. Future research should address these questions using longitudinal data that also has the ability to focus on developmental stages of adolescence. A data set of this type would allow for a nuanced examination of possible causal effects of positive social environments on adolescent health behaviors throughout adolescence.

Finally, due to a possibly strong cultural bias, the results regarding substance use may not be generalizable to the United States (Merrill, 2005). Utah has significantly lower rates of adolescent 30 day cigarette and alcohol use. The CDC (Smoking and Tobacco Use) reported that 19.5% of high school students reported 30 day cigarette use, whereas in Utah only about 6% of high school students reported 30 day cigarette use. A similar pattern has been seen with 30 day alcohol use. The CDC reported that 39% of

high school students drank some amount of alcohol in the past 30 days, whereas in Utah this number is closer to 12%. The unique culture in Utah may weaken the effect of any one particular positive social environment on behavior outcomes because overall there is less exposure to behavior role models that smoke and drink (Hirsch, 1985) and thus less opportunities to learn these behaviors (Ensminger, 1992).

Conclusion

This study suggests that positive social environments are important to understanding adolescent behavior, possibly through providing direct social support and indirectly through influencing other positive social environments. Importantly, although all levels of positive social environments seem to affect behaviors, positive peer environments play a large direct role in adolescent behavior outcomes, as such, those with positive peer environments are more likely to be prosocial (Fabes, 1999) and less likely to engage in risky behaviors such as using cigarettes and alcohol (Carlo, 2011; Hoyt 2012). Also, these findings along with previous research suggest that peer groups are influenced by other social environments which in turn affect adolescent behavior (Alexander, 2001; Leventhal, 2000; Neckerman, 1996). Communities, schools, and families affect the formation of peer groups, the pathways are complex, however, they all point to the importance of peer groups in adolescent behavior outcomes. Future research could examine how positive social environments directly influence the formation of peer groups and whether adolescents select peers that exert positive or negative influences. This study reminds us that peer pressure is not only related to negative or risky behaviors

such as drinking or smoking, but also, environments can influence positive behaviors through showing adolescents what is normative or acceptable behavior.

The effect of positive social environment on adolescent behavior may also depend on the stage of development within adolescence. The influence of positive social environments on adolescent behavior may vary throughout adolescence because each stage of development in adolescence is characterized by specific social and cognitive changes, and these changes may determine the amount of influence that specific positive social environments have on adolescent behavior.

Overall, because peer groups are important to the development of adolescent behavior and are influenced by other social environments (Alexander, 2001; Leventhal, 2000; Neckerman, 1996), any policy related to increasing the quality of adolescent social environments will have important effects on behavior outcomes. Applications of this research would include adopting social policies and programs that promote positive social environments. In general, public awareness campaigns could educate school administrators, teachers, and parents on the importance of strong, open, and supportive relationships with adolescents and how to build these types of relationships. One way to accomplish these types of relationships is for adults to understand the changes and stresses that occur during adolescence and how they can best provide aid and support related to these specific changes. One resource that is available to help accomplish this task is available at http://www.apa.org/pi/families/resources/develop.pdf. Federal or state dollars allocated to schools and communities could require such entities to create plans or work towards objectives that foster positive social environments using resources like the following: http://www.cdc.gov/healthyyouth/adolescenthealth/pdf/connectedness.pdf.

Specifically, the information from this study can aid policy makers and program funders in determining which positive environmental objective (at the community, school, or parental level) to fund based on how beneficial it will be in promoting prosocial behavior and reducing the risk of risky behaviors, and during which stages of development these changes would be most effective.

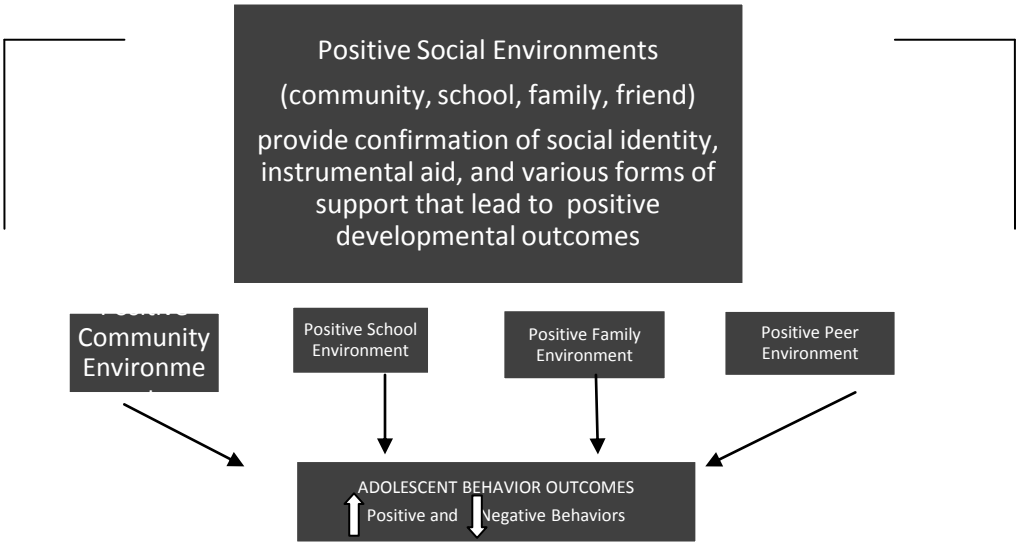


Figure 1. Positive Social Environmental Influences on Adolescent Behavior (Adapted from Blum 2002).

Table 1. Unweighted Sample Sizes and Weighted Percents of Demographic Variables.

	Total Sample (n=22091)
Sex	
Male	10828 (52%)
Female	11263 (48%)
Parental Education	
Some Grade school/Some High School	1184 (6%)
Some College	6567 (34%)
Graduate or Professional	11257 (60%)
Race	
American Indian	412 (2%)
Asian	427 (2%)
African American	337 (1%)
Hispanic	2579 (12%)
Pacific Islander	347 (2%)
White	16287 (73%)
Other	1702 (8%)

Data source: Utah Prevention Needs Assessment 2011

Table 2. Unweighted Sample Sizes and Weighted Percents of the Total Sample and Subsamples based on Grade.

	Total Sample (n=22091)	6th Grade (n=6933)	8th Grade (n=6005)	10th Grade (n=5120)	12th Grade (n=4033)
Prosocial Behavior*					
No	7815 (37%)	2464 (37%)	2138 (38%)	1825 (38%)	1388 (36%)
Yes	14083 (63%)	4392 (63%)	3815 (62%)	3262 (62%)	2614 (64%)
30 Day Cigarette Use*					
No	20758 (96%)	6667 (99%)	5662 (97%)	4754 (94%)	3675 (93%)
Yes	820 (4%)	43 (1%)	179 (3%)	288 (6%)	310 (7%)
30 Day Alcohol Use*					
No	20164 (92%)	6759 (99%)	5555 (94%)	4532 (89%)	3318 (84%)
Yes	1625 (8%)	89 (1%)	340 (6%)	525 (11%)	671 (16%)
Positive Community Environment*	Mean, 7.13	Mean, 7.40	Mean, 7.07	Mean, 6.97	Mean, 7.00
[Observed Range 3-12]	SE, .02	SE, .03	SE, .03	SE, .04	SE, .04
Positive School Environment*	Mean, 14.72	Mean, 14.91	Mean, 14.47	Mean, 14.71	Mean, 14.82
[Observed Range 5-20]	SE, .01	SE, .03	SE, .03	SE, .03	SE, .04
Positive Family Environment*	Mean, 9.23	Mean, 9.80	Mean, 9.07	Mean, 8.93	Mean, 8.92
[Observed Range 3-12]	SE, .02	SE, .03	SE, .03	SE, .03	SE, .04
Positive Peer Environment*	Mean, 18.67	Mean, 19.65	Mean, 18.34	Mean, 18.43	Mean, 18.13
[Observed Range 5-25]	SE, .03	SE, .05	SE, .06	SE, .06	SE, .07

*Significant difference across grades, $p < .05$, as assessed by ANOVAs and Chi-Square Test

Data source: Utah Prevention Needs Assessment 2011

Table 3. Logit Regressions of Positive Social Contexts on Prosocial Behavior. Odds Ratios (OR) and Confidence Intervals (CI).

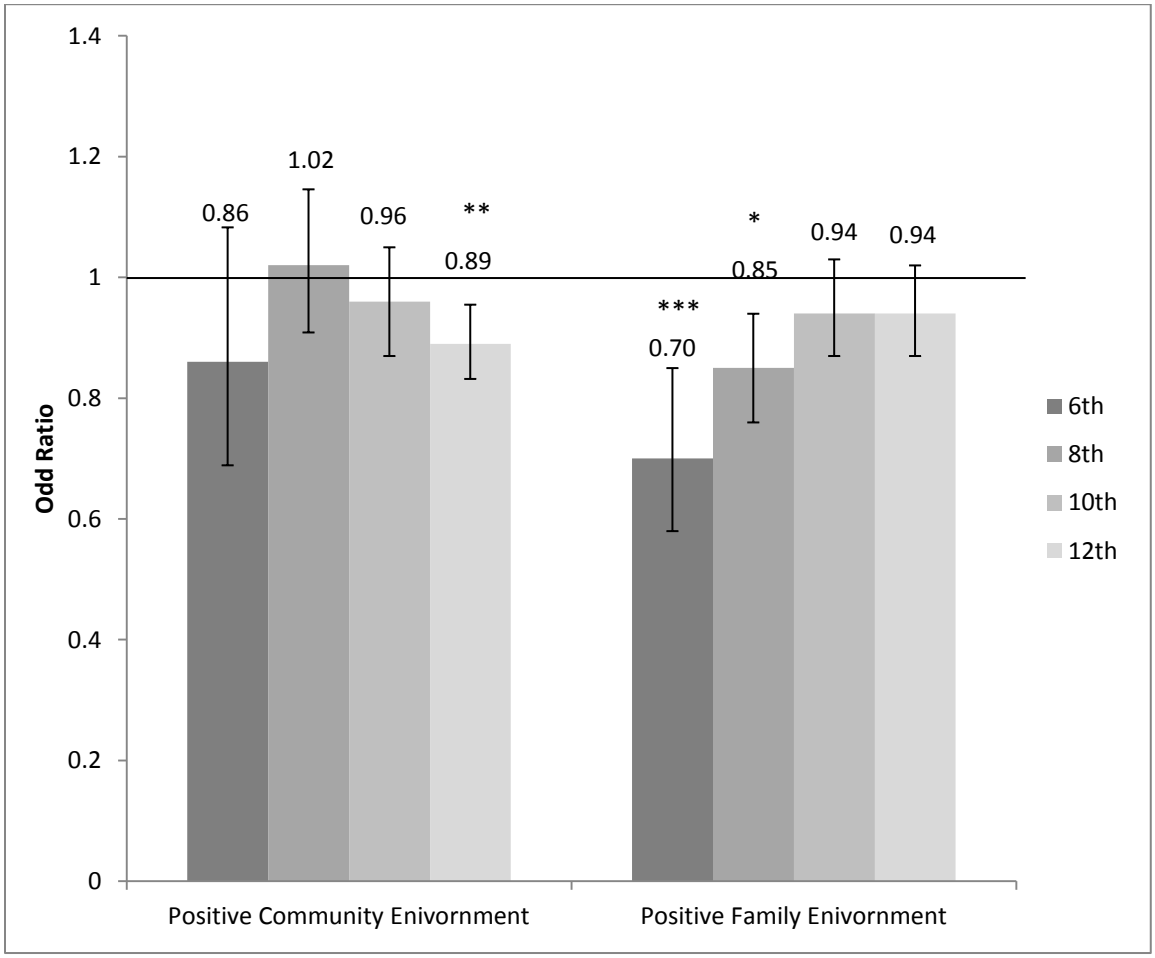
	Bivariate		*Model 1 (n=19196)*		*Model 2 (n=18864)*		*Model 3 (n=18628)*		*Model 4 (n=18010)*	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Positive Community Environment	1.28	(1.26-1.29)	1.24	(1.22-1.26)	1.21	(1.19-1.23)	1.17	(1.15-1.20)	1.09	(1.07-1.12)
Positive School Environment	1.21	(1.20-1.22)			1.14	(1.12-1.17)	1.12	(1.09-1.14)	1.06	(1.04-1.09)
Positive Family Environment	1.25	(1.23-1.26)					1.10	(1.08-1.13)	1.05	(1.03-1.08)
Positive Peer Environment	1.22	(1.21-.123)							1.18	(1.16-1.19)
Grade										
6th†			-	-	-	-	-	-	-	-
8th			1.07	(.95-1.20)	1.12	(1.00-1.26)	1.20	(1.06-1.36)	1.37	(1.20-1.56)
10th			1.04	(.93-1.17)	1.04	(.92-1.17)	1.15	(1.01-1.29)	1.31	(1.15-1.49)
12th			1.18	(1.04-1.34)	1.17	(1.03-1.34)	1.30	(1.13-1.48)	1.61	(1.40-1.86)
Sex										
Female			1.43	(1.31-1.56)	1.40	(1.28-1.53)	1.38	(1.26-1.51)	1.28	(1.17-1.41)
Male†			-	-	-	-	-	-	-	-
Parental Education										
Some Grade school /Some High School†			-	-	-	-	-	-	-	-
Some College			1.63	(1.36-1.95)	1.56	(1.30-1.88)	1.47	(1.22-1.78)	1.24	(1.01-1.53)
Graduate or Professional			2.65	(2.21-3.20)	2.55	(2.11-3.09)	2.37	(1.95-2.87)	1.69	(1.37-2.08)
Race										
American Indian			0.71	(.52-.99)	0.77	(.54-1.09)	0.82	(.58-1.16)	0.98	(.67-1.43)
Asian			1.02	(.80-1.49)	1.00	(.74-1.36)	1.07	(.78-1.45)	1.09	(.78-1.52)
African American			1.09	(.80-1.49)	1.07	(.77-1.49)	1.13	(.83-1.56)	1.20	(.85-1.69)
Hispanic			0.70	(.61-.81)	0.69	(.59-.79)	0.69	(.59-.79)	0.79	(.67-.92)
Pacific Islander			1.36	(.95-1.96	1.35	(.94-1.95)	1.41	(.98-2.05)	1.23	(.84-1.80)
White†			-	-	-	-	-	-	-	-
Other			0.94	(.80-1.10)	0.97	(.82-1.14)	0.99	(.84-1.16)	1.08	(.90-1.28)
Adjusted R^2			0.30		0.33		0.35		0.49	

Notes: Shaded areas have at least a $p<.05$. † is the reference variable. Data source: Utah PNA 2011.

Table 4. Logit Regressions of Positive Social Contexts on 30 Day Cigarette Use. Odds Ratios (OR) and Confidence Intervals (CI).

	Bivariate		***Model 1 (n=19143)***		***Model 2 (n=18799)***		***Model 3 (n=18567)***		***Model 4 (n=17951)***	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Positive Community Environment	0.76	(.74-.79)	0.78	(.75-.81)	0.80	(.77-.84)	0.84	(.80-.88)	0.93	(.88-.98)
Positive School Environment	0.84	(.82-.85)			0.90	(.87-.94)	0.93	(.89-.97)	1.00	(.95-1.05)
Positive Family Environment	0.76	(.73-.78)					0.87	(.83-.92)	0.92	(.87-.96)
Positive Peer Environment	0.79	(.78-.80)							0.83	(.81-.84)
Grade										
6th†			-	-	-	-	-	-	-	-
8th			4.64	(2.74-7.86)	4.46	(2.63-7.58)	3.96	(2.31-6.80)	2.98	(1.72-5.17)
10th			9.25	(5.53-15.45)	9.01	(5.38-15.09)	7.90	(4.65-13.42)	5.94	(3.47-10.16)
12th			12.31	(7.39-20.51)	12.26	(7.34-20.48)	10.91	(6.44-18.46)	7.86	(4.61-13.41)
Sex										
Female			1.08	(.90-1.31)	1.11	(.92-1.34)	1.10	(.91-1.33)	1.20	(.97-1.47)
Male†			-	-	-	-	-	-	-	-
Parental Education										
Some Grade school /Some High School†			-	-	-	-	-	-	-	-
Some College			0.71	(.50-.99)	0.74	(.52-1.05)	0.79	(.55-1.14)	0.98	(.67-1.44)
Graduate or Professional			0.36	(.25-.53)	0.38	(.26-.56)	0.43	(.29-.64)	0.63	(.42-.95)
Race										
American Indian			1.30	(.80-2.14)	1.26	(.77-2.08)	1.20	(.71-2.02)	0.99	(.57-1.72)
Asian			0.81	(.39-1.69)	0.86	(.41-1.82)	0.81	(.37-1.76)	1.02	(.48-2.15)
African American			1.03	(.57-1.86)	1.05	(.57-1.92)	0.98	(.52-1.84)	0.96	(.49-1.86)
Hispanic			0.61	(.44-.86)	0.64	(.46-.91)	0.66	(.47-.93)	0.57	(.40-.82)
Pacific Islander			2.04	(1.23-3.39)	2.14	(1.29-3.55)	2.05	(1.23-3.40)	2.75	(1.58-4.79)
White†			-	-	-	-	-	-	-	-
Other			0.95	(.66-1.36)	0.96	(.67-1.38)	0.94	(.66-1.35)	0.88	(.58-1.34)
Adjusted R^2			0.12		0.12		0.13		0.20	

Notes: Shaded areas have at least a $p < .05$. † is the reference variable. Data source: Utah PNA 2011.



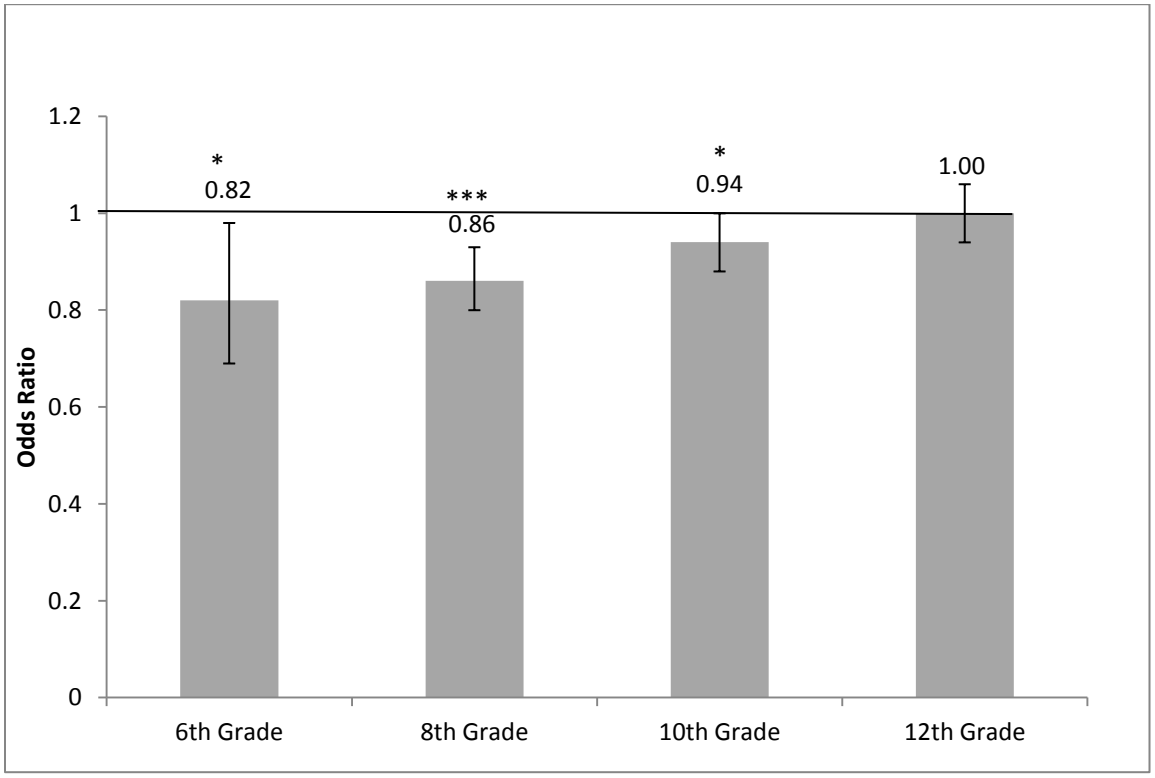
***p<.0001; **p<.001; *p<.05
Note: Odd Ratios were computed while controlling for all positive social contexts and control variables.
Data source: Utah PNA 2011.

Figure 2. Logistic Regression of Positive Community and Family Environment on 30 Day Cigarette Use by Grade.

Table 5. Logit Regressions of Positive Social Contexts on 30 Day Alcohol Use. Odds Ratios (OR) and Confidence Intervals (CI).

	Bivariate		*Model 1 (n=19143)*		*Model 2 (n=11877)*		*Model 3 (n=18543)*		*Model 4 (n=117922)*	
	OR	CI	OR	CI	OR	CI	OR	CI	OR	CI
Positive Community Enivornment	0.75	(.73-.77)	0.77	(.75-.80)	0.79	(.76-.81_	0.81	(.78-.84)	0.89	(.86-.92)
Positive School Enivornment	0.87	(.85-.88)			.93.	(.90-.96)	0.95	(.92-.99)	1.03	(.99-1.07)
Positive Family Enivornment	0.77	(.75-.79)					0.90	(.87-.93)	0.94	(.91-.98)
Positive Peer Enivornment	0.81	(.81-.82)							0.84	(.83-.85)
Grade										
6th†			-	-	-	-	-	-	-	-
8th			4.12	(2.82-6.03)	3.9	(2.67-5.72)	3.48	(2.36-5.15)	3.07	(2.05-4.59)
10th			8.43	(5.82-12.21)	8.18	(5.64-11.87)	7.46	(5.09-10.93)	6.91	(4.68-10.20)
12th			13.60	(9.43-19.61)	13.39	(9.27-19.34)	12.23	(8.38-17.84)	10.93	(7.45-16.04)
Sex										
Female			1.00	(.88-1.16)	1	(.87-1.16)	1.02	(.88-1.17)	1.09	(.93-1.26)
Male†			-	-	-	-	-	-	-	-
Parental Education										
Some Grade school /Some High School†			-	-	-	-	-	-	-	-
Some College			0.62	(.48-.79)	0.63	(.49-.81)	0.65	(.51-.84)	0.75	(.58-.98)
Graduate or Professional			0.41	(.32-.53)	0.41	(.32-.54)	0.44	(.34-.58)	0.62	(.47-.82)
Race										
American Indian			1.48	(.83-2.64)	1.44	(.82-2.53)	1.36	(.75-2.47)	1.13	(.57-2.22)
Asian			0.83	(.50-1.39)	0.88	(.53-1.47)	0.82	(.48-1.41)	0.97	(.57-1.68)
African American			1.17	(.69-1.98)	1.19	(.70-2.01)	1.10	(.64-1.89)	1.06	(.60-1.89)
Hispanic			1.18	(.95-1.48)	1.23	(.98-1.53)	1.20	(.96-1.50)	1.04	(.83-1.30)
Pacific Islander			1.37	(.88-2.14)	1.41	(.91-2.20)	1.34	(.86-2.09)	1.67	(1.04-2.69)
White†			-	-	-	-	-	-	-	-
Other			1.13	(.87-1.46)	1.10	(.85-1.43)	1.07	(.82-1.39)	1.04	(.80-1.35)
Adjusted R^2			0.24		0.24		0.25		0.34	

Notes: Shaded areas have at least a $p<.05$. † is the reference variable. Data source: Utah PNA 2011.



***p<.0001; **p<.001; *p<.05
Note: Odd Ratios were computed while controlling for all positive social contexts and control variables.
Data source: Utah PNA 2011.

Figure 3. Logistic Regression of Positive Family Environment on 30 Day Alcohol Use by Grade.

CHAPTER 3

POSITIVE SOCIAL ENVIRONMENTS AND ADOLESCENT DEPRESSION OVER THE COURSE OF ADOLESCENCE

Introduction

The study of adolescent depression represents a major public health concern because it is the most widely reported disorder to occur during adolescence (Mulye, 2009) and can have lasting implications on later life health. In 2011, about 8% of the population ages 12–17 had a Major Depressive Episode (MDE) during the past year (Adolescent Depression). Furthermore, adolescents who experience depression are likely to experience depression as adults (Ge, 2001; Pine, 1999). Later life problems such as obesity (Goodman, 2002), low social support and self-esteem (Galambos, 2006), and unemployment (Galambos, 2006) have also been found to be higher among those adolescents who suffered from depression. As well, depressed adolescents tend to be more likely to exhibit academic problems, drop-out of school, and attempt suicide (Brooks, 2002; Eggert, 2002). The average age of onset is around age 15 (Essau & Petermann, 1997), with some reports suggesting that older adolescents often more depressed than younger adolescents (Kaplan, 1984). These findings highlight adolescence as a critical period for identification, prevention, and intervention of depression.

Social environments play an important role in adolescent depression. Through dynamic interactions and relations that occur within environmental contexts like community, school, family, and peers, adolescents are exposed to risk and protective factors that are related to adolescent depression (Lerner, 1998). Protective factors guard against the development of adolescent depression, whereas, risk factors increase the likelihood of adolescent depression (Bond, 2005). Salience of these risk and protective factors may change throughout adolescence in concurrence with developmental changes that make an adolescent sensitive to a specific environmental inputs (Bauman, 1986; Laible, 2004). This study will explore specifically which types of social environments are most associated with adolescent depression risk. For example, does a positive community or school environment have less impact on one's depression risk than the role of positive peers or family?

Depression in Adolescence

Adolescence is a time in human growth that is characterized by a great deal of developmental change. The beginning of adolescence is marked by the dramatic biological changes of puberty and usually ends with a transition into an adult role like marriage, parenthood, completion of education, or entrance into the labor force (Smetana, 2006). Adolescence is also filled with cognitive, emotional, behavioral, and social change (Collins et al., 2000). These changes are often not easy (Schulenberg et al, 2003) and adolescent development has often been characterized by theorists as a period of "storm and stress" (Arnett, 1999).

Movement through these cognitive, emotional, behavioral, and social changes often coincides with risk factors related to adolescent depression like stress, anxiety, and even family conflict (Dumont, 1999; Fabes, 1999; Fleming, 1990; Rew, p. 11; White, 1987). Stress and anxiety have been related to pubertal changes because adolescents begin to worry about these changes and how they are viewed by others. They may also begin to experience stress related to peer pressure and to engage in antisocial behaviors (Newcomb, 1992). As adolescents move from early to late adolescence, they begin to recognize multiple selves who play different roles in different contexts. They also begin to experience different levels of self-worth and are trying to develop a coherent view of their "self" (Rew, p. 104). They begin to gain independence in making their own decisions. These components of development can be extremely stressful and without the proper support, adolescents may begin to feel hopeless and helpless as precursors of depression (Hankin, 2001).

As an important developmental stage bridging childhood and adulthood, adolescence has been further segmented into three distinct developmental transitional periods: early adolescence (ages 10–13), middle adolescence (ages 14–17), and late adolescence (18 until the early twenties; Smetana, 2006). These critical periods of development or ages have varying rates of depression (Yurgelun-Todd, 2007). For young adolescents, (ages 12-13) the depression rate may be around 9.3% (Garrison, 1990), middle adolescents (ages 14-16) around 13.0% (Kessler, 1998), and older adolescents around 12.2% (Kessler, 1998). These stages are important to consider when studying adolescence because adolescence represents a period of great developmental change

characterized by constant turning points and transitions (Smetana, 2006) that can affect the development of depression.

Developmentally, there are difficult and stressful changes that occur within each of these stages that maybe more or less related to depression. For example, younger adolescents tend to go back and forth between high expectations and lack of confidence, experience more moodiness, and feel stress from more challenging school work when compared to other stages of development (Child Development, 2012). For older adolescents, stress may come from other factors of development like gaining more independence, worrying about their physical appearance, and beginning to think about the future (Child Development, 2012). Other risk factors related to depression also vary according to developmental stage of adolescence. For younger adolescents, bullying and being bullied (Saluja, 2004), peer attachment style (Muris, 2002), and rejection by peer, parent, or teacher (Nolan, 2003) were related to depression. For older adolescents, loneliness, (Brage, 1993), interpersonal conflict with parents (Lewisohn, 1995), academic difficulties (Lewisohn, 1998), and functional impairment and disease were related to the onset of depression (Lewisohn, 1998). Despite these potential differences, there are also similarities in risk factors between younger and older adolescents. Among both older (age 15-18) and younger (age 12-14) adolescents, girls tend to have a higher prevalence of depression than boys, and substance use for both boys and girls has been highly correlated with depression (Lewisohn, 1998; Saluja, 2004). Differences and similarities in these risk factors for depression may be related to the biological, psychological, and neurological changes (Collins et al. 2000) that occur throughout adolescence (Smetana, 2006).

Changes in adolescence also include an increase in protective factors against depression (Bond, 2005). Prosocial behaviors (a voluntary action intended to be beneficial; Esienberg, 1995) have been shown to protect against depression in adolescence through an increase in self-esteem and coping abilities (Bandura, 1999). Increases in prosocial behavior throughout adolescence are also related to cognitive developments that allow adolescents to reason at a higher level which may decrease one's risk for depression (Eisenberg, 1995). In conclusion, the path to depression during adolescence may differ due to the differences in risk and protective factors related to specific stages within adolescence (Bond, 2005; Shanahan, 2011). This may be related to the constantly changing nature of adolescence and changing influence of any one social environment over the course of adolescence.

Social Contexts and Adolescent Depression

The influence of transitions and turning points on depression are not only affected by when they happen but also by the networks of shared relationships in an individual's life. Networks of shared relationships are fostered within developmental social contexts and are important because the actions of one person in a group can have resounding effects on other members of the group (Elder, 2004). Communities, schools, family, and peer groups are all embedded within a greater social landscape that directly and indirectly affect adolescent depression. For example, parents must act as "advocates or brokers" for their children's receipt of community resources (Leventhal, 2000), this means that the effect of neighborhood resources on young children outcomes may be indirect, i.e., to operate through familial processes (Leventhal, 2000). However, as

individuals reach the later stages of adolescence and gain more independence, they may become more able to be their own advocates and brokers of community resources, thereby decreasing the importance of family influence. This same pattern can be seen for parents and schools and their effects on peer groups. Parental authority over appropriate peer groups can directly influence the effect of peer groups on adolescent outcomes (Roth, 2000), while school social cohesion leads to more stable friend groups, and these stable friends groups protect against adolescent depression (Neckerman, 1996).

Research on adolescent depression has suggested that social environments might be directly associated with an individual's depression risk (Bond, 2005). On the one hand, social environments may positively influence an individual by providing support (Bliese, 2001) or by modeling positive behaviors that protect against depression risk (Ensminger, 1992). Specifically, positive social environments and positive behaviors help to create positive coping skills and a sense of self-worth that help adolescents overcome obstacles related to depression (Hirsch, 1985). On the other hand, social environments may negatively affect individual behaviors by providing poor societal mores and norms that encourage risky behaviors (Millstein, 2002). They may also lack social support that helps individuals cope with the negative effects of stressful atmospheres (like adolescence; Bliese, 2001), making them more likely to engage in risky behaviors (Urberg, 2005).

Social environments that are positive social environments have been related to a decreased likelihood of depression in adolescence (Bond, 2005). Being positive in nature means that they provide confirmation of social identity, instrumental aid, and various forms of support (emotional, informational and appraisal) to group members (Cassel,

1974; Cobb, 1976; Cohen & Wills, 1985; House, 1981). Social environments and the shared relationships within them can provide life training and support for developing competencies within adolescents that serves to protect them in the face of increased risks that may lead to depression (Croll, 2002). Specifically, positive social environments that provide various forms of support create resiliency and competencies in adolescents (Calvert, 1997) that can protect against depression. These environments can include neighbors who create a sense of social cohesion within the neighborhood thereby fostering self-esteem (Pals, 2012), teachers who provide warm supportive atmospheres (Wang, 2012), parents who provide emotional support (Amato, 2000), and friends who provide warm and supportive friendships (Millings, 2012).

Positive social environments protect against depression outcomes through a variety of paths making them an important component in understanding adolescent depression and thus making them a central focus of this research. Positive social environments may indirectly affect depression through influencing other positive social environments (Leventhal, 2000; Roth, 2000). On the other hand, positive social environments may also directly affect depression by providing instrumental aid and various kinds of support for overcoming disappointments or stressful events that can lead to depression (Bond, 2005) by fostering the creation of coping skills, self-worth, and the promotion of prosocial behaviors (Carlo, 1999) which then mitigate the effects of negative experiences like risky behaviors and stress on depression outcomes (Rew, p. 203).

Positive social environments have also been linked to the development of prosocial behavior (Carlo, 1999). The development of prosocial behaviors through

positive social environments can occur through learning and action opportunities for adolescents to be prosocial in their own behavior while also providing various forms of support and aid that help sustain prosocial behaviors (Carlo, 1999; Fabes, 1999). Specifically, positive social environments promote prosocial behaviors by providing information about generally desirable ways to behave, direct modeling of prosocial behavior, and encouraging and directing appropriate prosocial behavior (Carlo, 1999) and activities that may lead to prosocial behavior (Eisenberg & Murphy, 1995) through self-efficacy (Eklund, 2012).

Prosocial behavior has also been linked to adolescent depression through an increased sense of self-worth. Prosocial behavior has been shown to promote social relationships that foster self-worth (Alessandri, 2009). These social relationships foster others' regard and nourish positive feelings related to self-worth (Musick, Herzog, & House, 1999). These features of prosocial behavior (positive social relationships and self-worth) guard against depression because of their relationship to positive thinking which corresponds to dimensions underlying life satisfaction and optimism about overcoming challenges (Caprara, 2005). Also, when adolescents engage in prosocial behavior that increases their sense of self-worth (Alessandri, 2009) they can deal more successfully with the potentially harmful effects of stress (Dumont, 1999), including a decreased risk of depression (King, 1993). Overall, these findings suggest that prosocial behavior may play an important mediating role between positive social environments and depression.

Positive social environments have also been linked to a lower likelihood of participating in risky behaviors like cigarette and alcohol use (Cantillon, 2006; Kumpfer, 1990). One reason for this protective effect is that positive social environments provide

social support. Specifically, social support helps individuals cope with the negative effects of stressful atmospheres (Bliese, 2001), making them less likely to use cigarettes and alcohol (Urberg, 2005). Positive social environments also discourage risky behaviors by providing positive societal mores and norms that discourage risky behaviors (Eisenberg et al., 1995) and by creating prosocial beliefs, values, and interests that are not consistent with risky behaviors (Carlo, 2011).

Risky behaviors like cigarette and alcohol use have also been linked to an increased risk of adolescent depression (Veselskaa, 2009). One line of research has found that those with a lower sense of self-worth are more likely to engage in risky behaviors (Veselskaa , 2009) because they lack positive ways of dealing with negative feelings which can lead to depression (Jessor, 1995). Another line of research has found that depression can be a direct consequence of risky behaviors. For example, one study in adults found that daily mood impairment occurred between cigarettes due to an acute period of nicotine withdraw (Parrot, 1995); in relation to these findings, chronic use of alcohol and other drugs used during adolescence have also been associated with depressive symptoms (Deykin, 1987). Overall, these findings suggest that risky behaviors may play an important mediating role between positive social environments and depression.

Because each phase of adolescence is concerned with different social, cognitive, and physical maturation, different social environments may be more or less salient over the course of adolescence (Bauman, 1986; Laible, 2004). For example, in early adolescence, children are still quite reliant on parents (Hurd, 2005). However, as they get older and gain more independence, peer groups may play a larger role (Gentry, 2002)

This shift means that he/she begins to rely less on their family for emotional and social support (i.e., positive social environments) and more on their friends (Cooper 1985). Therefore it is important to consider how the range of social environments (e.g., neighborhoods, schools, family, and friends) and their influences may positively or negatively affect adolescent outcomes over the course of adolescence. Of particular concern in this paper is whether these social environments differentially affect or protect adolescents, young, middle, or older adolescents, from exhibiting depressive symptoms.

As the guiding theoretical framework for this study, Figure 4. illustrates that social environments may influence adolescent depression risk, either by providing general support and positive influence, or by teaching or modeling behaviors that place individuals at greater or lower risk for depression. Considering these relationships within the developmental stages of adolescence (early, middle, late) further complicates how social environments affect depression risk. In the sections that follow I will attempt to untangle some of the specific pathways linking social environments and depression by providing examples of how each type of positive social environment (neighborhood, school, family, and peer) may influence adolescent depression and how these effects might vary over the course of adolescence.

Positive Community/Neighborhood Environment

Neighborhood cohesion offers a clear example of how neighborhood relationships and support can be useful in understanding adolescent depression. Neighborhood cohesion measures the quality and strength of relationships like mutual

trust, solidarity, and shared values in a neighborhood (Brooks-Gunn, 2008). Adolescents who are from neighborhoods with low social cohesion have been found to have a lower self-esteem (Pals, 2012), and lowered self-esteem has been linked to depression in adolescence (Galambos, 2006). These effects may also vary according to the age of the adolescent.

Important social, psychological, and cognitive developments that occur at specific points of time within adolescence may affect how positive neighborhood environments influence adolescence depression between younger and older adolescents. One study found that neighborhood poverty was associated with depression in younger adolescent boys but not in older adolescent boys (Katz, 2012). It was suggested that this finding was related to the developmental differences of the internalization process and how stressors and violence were understood between the two groups. Thus, neighborhoods play an important role in adolescent depression through the relationships that are fostered and the developmental capacity that adolescents have to internalize the things that happen within their neighborhood. However, since adolescents tend to spend more of their time in school and with their family and friends (Larson, 2002) further investigation of these social contexts on adolescent depression is important.

Positive School Environment

School environments play an important part in adolescent depression because not only do adolescents spend a lot of time at school which means they are highly exposed to the relationships schools foster, but schools also play an important role in terms of providing possible interventions and assisting students with help when they need it.

Adolescent depression may be influenced by positive school environments and specifically teacher relationships. One study found that positive school environments characterized as having warm and supportive relationships from teachers negatively influenced depression in adolescents (Wang, 2012), meaning that those with warm and supportive teachers had lower rates of depression. Warm and supportive relationships with teachers may be important to the avoidance of adolescent depression because adolescents who feel they can trust their teachers and are supported by them tend to have higher levels of self-efficacy and self-worth (Reddy, 2003) which are negatively associated with depression (Jessor, 1995). Interestingly, the influence of positive school environment on depressive symptoms may not vary across age groups; one study found positive school environment had the same effect on depression outcomes between 8th and 11th graders (Brier, 2013). Regardless, positive school environments and teacher relationships are an important component for protecting adolescents against depression. Although teachers play an important role in adolescent depression, families and especially parents are typically the primary adult influences in adolescent lives (Peterson, 1993).

Positive Family Environment

An important component to the influence of positive family environments on adolescent depression stems from parental and adolescent relationships in light of genetic influences. Previous research has suggested that parent-child relationships undergo a period of realignment in adolescence that can create a family environment characterized as distant and conflictive (Collins, 1991). Furthermore, Amato (2000) found that the

longer parental relationships remained disconnected and unsupportive the more likely the adolescent was to become depressed. Sustained poor quality of parental relationships hinders self-esteem and self-worth (Costello, 2008; Haque, 1988) which then increases the likelihood of depression in adolescence and later into adulthood (Costello, 2008). However, if parents can maintain a warm and support relationship in the face of such developmental change then the risk of adolescent depression decreases (Bond, 2005).

The effect of parental relationships is further complicated by the idea that adolescents with depressed parents may be genetically prone to adolescent depression. Orvaschel (1980) found a genetic influence of parental depression on adolescent depression. However, there are two possible explanations for this effect. First, depressed parents may not provide the warmth and support that are needed to protect an adolescent from depression, and second, family conflict, as a confounding variable, can lead to both adolescent depression (Costello, 2008) and parental depression (Tully, 2008). Thus, it seems that positive family environments may play an important role in adolescent depression regardless of genetics.

The influence of positive family environments on depression may also differ according to adolescent stage. One study found that family environments characterized as cohesive, organized, and expressive were associated with younger adolescents having positive psychological functioning (which is negatively related to depression), whereas there was no relationship in this same group at an older age (Burt, 1988). One explanation for this finding could be that the role of positive family environments on adolescent outcomes may change as the adolescent moves from a more family centered

focus to friends (Gentry, 2002), thus peer influences become an important part of adolescent developmental trajectories (Aseltine, 1994).

Positive Peer/Friend Environments

The establishment of a peer network is an important part of adolescence development (Larson, 1991); and the value of a positive peer environments in protecting against depression is highlighted in the influence that friendship quality has on depression outcomes. Friendship quality is important because it can positively influence adolescent self-esteem (Simmons, 1987), and adolescents who exhibit a high level of self- esteem have a lower risk of becoming depressed (Costello, 2008). Furthermore, the quality of friendships defined as warm and supportive has been shown to have negative effects on adolescent depression because everyday stress is mitigated through good friends and being popular, and this keeps adolescents from becoming depressed (Millings, 2012).

The age at which an adolescent is exposed to quality friendships has shown to be an important factor in decreasing the risk of depression. For example, having quality friendships during early childhood has a negative effect on the development of later adolescent depression (Birmaher, 1996). Thus, quality friends that are warm and supportive and increase self-esteem may protect against adolescent depression, and this may be especially true for younger adolescents.

Current Study

This study will examine the effects of positive social environments on depressive symptoms throughout adolescence (Pine, 1999). Considering the shifting role of social

relations during the developmental stages of adolescence, this study has two primary aims. The first aim was to i*nvestigate the role of positive social environments on adolescent depressive symptoms and the role of prosocial and risky behaviors as possible mechanisms.* Based on previous literature, positive social environments are related to lower depressive symptoms, with the strongest effects from positive family environments (Bond, 2005). However, because the influence of families versus peers versus other social influences commonly shift over the course of early to late adolescence (Cooper, 1985; Gentry, 2002; Hurd, 2005) it is imperative to look at the distinct role of each positive social context on the expression of depressive symptoms at distinct phases of adolescence. Previous research has also shown that different types of positive social environments often mediate the relationship between other positive social environments and depressive symptoms (Blum, 2002). For example, a strong positive family environment offsets the effects of a positive friend group (Cook, 2002). Furthermore, research suggests that prosocial and risky behaviors may be possible behavioral mechanisms of positive social environments and depression. Accordingly, I hypothesized that all positive social environments will have main effects on depressive symptoms, but these effects will change with the consideration of other positive social environments and with the addition of prosocial and risky behaviors. The goal of this research aim is to identify the potential protective effects of each type of positive social environment alone and together on depressive symptoms. An important feature of this study is the ability to control for prosocial and risky behaviors as behavioral mechanisms of depression.

The second aim was to e*xamine whether the role of positive social environments on depressive symptoms differ by grade i.e., across the adolescent stages of development*

(early, middle, late). The goal of this research aim is to determine if the relationship between positive social environments on depressive symptoms changes over the course of adolescence given the unique developmental changes that also occur (Smetana, 2006). I hypothesized that these relationships will differ according to adolescent stage (i.e., grade). Young adolescents' acceptance with peers is often very important, whereas, middle adolescents may begin to conform less to peers, and although peers are still important to late adolescents they play a smaller role in developmental outcomes (Hurd, 2005). The relative importance of peer groups from one stage to another is just one way example of how the salience of social environments on adolescent developmental outcomes may vary over the course of adolescence.

Limits of Previous Research

Research on the development of adolescent depression has fallen short on account of the majority of attention has been given to how negative effects like stress and risky behaviors affect the likelihood of depression. A recent report by National Research Council and Institute of Medicine has called for a shift in research on adolescent emotional and behavior disorders from a myopic focus on health and negative experiences to one that promotes competencies and healthy functioning. This study goes a step further by examining the influence of positive social environments (that promote competencies) in conjunction with prosocial and risky behaviors on depression outcomes. This approach provides insight into positive experiences that hinder problematic health outcomes like adolescent depression in conjunction with those that promote it. The

results will highlight the protective capabilities that positive social environments have on depression outcomes.

Another limitation in previous research is that most studies which assess the influence of positive social environments on depression tend to focus on only one positive social environment at a time. Comprehensive research should examine how concurrent positive social environments affect outcomes in order to understand their relative importance because one environmental factor like parents or family may influence how another social environment like friends affect outcomes. For example, one study found that stressful family relationships exerted a greater positive effect on adolescent depression than friend relationships (Aseltine, 1994). This study attempts to look at this issue by examining the influence of several levels of positive social environments concurrently on adolescent depression. Furthermore, the salience of peer and family environmental effects on depression may be related to adolescent developmental stage. More research should consider the developmental differences that occur over the course of adolescence and how they affect the relationship between social contexts and depression. Few studies actually compare differences in depression outcomes between younger, middle, and older adolescents and the changing salience of social environment within these stages. This approach is important to understanding adolescent depression because adolescence is a time of great developmental change (Smetana, 2006).

Methods

Data

Data for this study came from the Utah Prevention Needs Assessment (PNA) 2011 survey, and was collected by the Utah Human Services Division of Substance Abuse and Mental Health. The PNA is a cross-sectional survey that is administered every other year. The PNA is primarily administered to students in grades 6, 8, 10, and 12. The PNA is also administered to some 7th, 9th, and 11th graders. The decision to administer the survey to 7th, 9th, and 11th graders is made individually by each school and thus makes these data not generalizable for those grades. Thus, this analysis focused only on the samples from grades 6, 8, 10, and 12.

Aside from the advantage of its size, the PNA uses sampling techniques and weights that make it representative of students in Utah from middle school to high school. The PNA uses a multistage area probability sample design and sampling weights are provided for 2011. The first stage of sampling sampled schools (n=455) within all school districts in Utah. The second stage consisted of a random sample of classes within schools.

Preparing the data also included giving students an honesty score and those who were "dishonest" in answering questions on the survey were not used in the analyses. Students with honesty of "0" were deemed to be dishonest according to at least one of the five following criteria: 1) used drugs (not including alcohol or tobacco) on more than 120 occasions in the past 30 days, 2) reported using a fictitious drug, 3) reported that they were "not honest at all" in completing the questionnaire, 4) marked more 30-day use for a substance than their lifetime use more than one time, or 5) their age and grade did not

match, such as a student 19 years of age who marked grade 6. Only the honest students in grades 6, 8, 10, and 12 were used to weight the data, about 3% of the data were not weighted because of "dishonest" students. The weighting variable is based on school, gender, and grade.

The sample from 2011 included a representative sample of Utah 6th, 8th, 10th, 12th graders (N= 48758). There is one major limitation in this dataset. First, due to reasons of efficiency, only half the sampled students in 2011 received a full version of the survey which assessed the variables used to measure the full array of positive social environments; the other half received a form that assessed only a portion of the variables used to measure positive social environments. Only half the respondents were used in this study in order to ensure that only those who were surveyed for all positive social environments were included in the analysis (n= 22091). Thus, this study consisted of only half the records to ensure that only those who were surveyed for all positive social environments were included in the analysis (n=22,091). This approach did not hinder analyses because of the random sampling of the two forms and because there was still a large sample to be analyzed. The full set of observations for 2011 was 48,758, thus about 50% of observations were lost due to this sampling design. The strengths of this data set included its large numbers which allowed for a refined analysis across grades, the representative nature of Utah students, and the assignment of "honest" and "dishonest" respondents.

Measures

Dependent variable. Depressive symptoms scale was created from four different questions that tap into depressive symptoms. The questions which used child appropriate responses of "NO!(completely disagree), no (disagree), yes (agree), YES! (completely agree)" are: "At times, I think I am no good at all," "All in all, I am inclined to think that I am a failure," "In the past year, have you felt depressed or sad MOST days, even if you felt okay sometimes," "Sometimes, I think that life is not worth it" with a response of "NO! (meaning completely disagree), no (disagree), yes (agree), YES! (completely agree)." The response options to the questions were given values of 1-4 with "NO!" receiving a value of 1 and "YES!" receiving a value of 4. The theoretical range was 1 to 16, and the observed range was 4 to 16 meaning that everyone in the analysis answered all four questions (only 492 did not answer all 4 questions).

The validity of this construct was tested using factor analysis techniques. The factor analysis found that the variables used to create the depressive symptoms scale loaded onto just one factor with good validity (MSA was above .80). The variables also had a good correlation with a Cronbach alpha of .89. A study by McKenzie (2011) found that adolescent depression screening tests that assess at least four feelings of self-hatred and being unloved, such as this composite, performed almost as well as having all 13 Short Mood and Feelings Questionnaire (SMFQ; Messer, 1995) in predicating subsequent depression symptoms. Using this scale versus a certified index like the SMFQ has the advantage of assessing symptoms that can lead to future depression (Pine, 1999). This distinction is important because even having a few symptoms of depression in

adolescence can strongly predict an episode of major depression in adulthood, even among adolescents who never experience major depression (Pine, 1999).

Only those who answered all four questions in the index were used in the final analyses thus making the observed range 4 (meaning they answered "NO!" to all four questions) to 16 (meaning they answered "YES!" to all four questions). A higher number on the scale means more depressive symptoms. The mean was 7.62 and was normally distributed.

Independent variables. This study draws on a multidimensional approach to measuring the social contexts to which each adolescent are exposed. All variables focus on whether the social contexts provide *positive* support or influence; and each variable measures a different domain of social context, including neighborhood, family, school, and peer environments. Each of the positive social environments' validity was tested using factor analysis techniques. Factor analysis found that the variables used to create each positive social construct all loaded onto just one factor with good validity (MSA was above .77). This measurement approach was derived from Arthur (2002), who used the same questions to create valid constructs of positive social environments.

Positive community context was created from three different questions that tap into positive social attributes of a neighborhood. The following questions using child appropriate responses of "NO! (completely disagree), no (disagree), yes (agree), YES! (completely agree)" are: "My neighbors notice when I do a good job," "People in my neighborhood are proud when I do well," "People in my neighborhood encourage me to do my best" with a response of "NO! (meaning completely disagree), no (disagree), yes (agree), YES! (completely agree)." The response options to the questions were given

values of 1-4 with “NO!” receiving a value of 1 and “YES!” receiving a value of 4. The answers from each of the questions were added together to create a linear variable of positive community environment. This construct had a range of 3 to 12 with 3 meaning that they reported “NO!” on all three questions and 12 meaning that they reported a four or “YES!” on all three questions. The mean was 7.13 and was normally distributed. The Cronbach alpha for the five items was .88.

Positive school context was created from five different questions that tap into the potential positive influence of schools. These questions are: “In my school, students have lots of chances to help decide things like class activities,” “There are lots of chances for students in my school to talk with a teacher one-on-one,” “Teachers ask me to work on special classroom project,” “I have lots of chances to be a part of class discussions or activities,” and “I have lots of chances to get involved in school activities.” The response to these questions were: “NO!,” “no,” “yes,” “YES!” Each response were given a value of 1-4, with “NO!” given the value of 1 and “YES!” given the value of 4. The answers from each of the questions were added together to create a linear variable of positive school environment, with a range of 3 to 20. Higher numbers indicate higher levels of positive influence from school environments. The mean was 14.71 and was normally distributed. Cronbach alpha for the five items was .65.

Positive family context was created from three different questions that tap into the potential positive influence of families. These questions are: “My parents give me lots of chances to do fun things with them,” “My parents ask me what I think before most family decisions affecting me are made,” “If I had a personal problem, I could ask my mom or dad for help.” The response to these questions were: “NO!,” “no,” “yes,” “YES!” Each

response were given a value of 1-4, with "NO!" given the value of 1 and "YES!" given the value of 4. The answer from each of the questions were added together to create a linear variable of positive family environment with a range of 3 to 12. Higher numbers indicate a greater level of positive family influence. The mean was 9.23 and was normally distributed. The Cronbach alpha for the 3 items was .99.

Positive peer context was created from five different questions that tap into the positive influence friends may provide. These questions are: "Think of your four best friends (the friends you feel closest to), in the past year (12 months), how many of your best friends have:" "participated in clubs, organizations and activities at school," "made the commitment to stay drug-free," "tried to do well in school," "liked school," "regularly attended religious services?" The response to these questions "0-4 friends" with "0 friends" being given a value of 1 and "4 friends" being given the value of 5. The answer from each of the questions were added together to create a linear variable of positive friend environment with a range of 5 to 20. Higher numbers indicate a greater level of positive peer influence. The mean was 18.66 and was normally distributed. The Cronbach alpha for the four items was .74.

Behavioral mechanisms. Behavioral mechanisms include substance use as an example of negative behaviors that may increase the risk of depression (Choi, 1997) and prosocial behaviors that may reduce the risk of depression (Alessandri, 2009; Veselskaa, 2009). Behavioral mechanisms were tested in both linear and dichotomous forms in separate models (substance use and prosocial were not in the same model). Both the linear and dichotomous form were tested together in the same model in order to determine which variable construction best explained the model. For the behavior

variables (prosocial, cigarette and alcohol use), in the models with both the linear and dichotomous variables, the dichotomous variables (according to the *p*-values and the magnitude of the effect) proved to be the best predictor of depressive symptoms.

Prosocial behavior was created from three different questions that tap into constructs of prosocial behavior, and follows Arthur's (2002) approach. These questions are: "How many times in the past (12 months) have you: "participated in clubs, organizations and school activities," "done extra work on your own for school," "volunteered to do community service?" The response options to these questions were "Never, 1 or 2 times, 3-5, 6-9, 10-19, 20-29, 30-39, 40+". The response options were coded as numbers 1-8 with "Never" given the value of 1 and "40+" given the value of 8. The responses to the three questions were sampled to create a numerical value of prosocial behavior. The theoretical range of the scale was 1 to 24, and the observed range was 3 to 24.

The validity of this construct was tested using factor analysis techniques. The factor analysis found that the variables used to create the prosocial construct loaded onto just one factor with good validity (MSA was above .70). The variables also had a good correlation with a Cronbach alpha of .72.

Those persons who reported "never" to all three items (i.e., had a score of 3) were assigned a value of 0, meaning that they exhibited no prosocial behavior during the past 12 months; those respondents who reported doing at least one behavior at least once during the past 12 months (i.e., had a score of at least 4) were coded as 1, meaning that they exhibited some type of prosocial behavior at least once during the past 12 months. This dichotomous coding is a data reduction technique that admittedly loses a lot of

information about the frequency of repeat prosocial behaviors (i.e., it does not differentiate those students who do a lot versus a little prosocial behavior); however, it efficiently identifies those students who have prosocial behaviors versus those who have no prosocial behaviors. This latter distinction will highlight how change in the positive social environment can affect adolescents' likelihood of exhibiting *any* prosocial behavior versus not. This distinction is important because regardless of how much prosocial behavior an adolescent exhibits, research has found that any amount of prosocial behavior can positively affect health behavior outcomes (Monahan, 2011).

Risky behaviors were measured with two common variables; cigarette and alcohol use. Cigarette use was created from the question "During the past 30 days on how many days did you smoke cigarettes?" The response options were: "0 days," "1 or 2 days," "3 to 5 days," "6 to 9 days," "10 to 19 days," "20 to 29 days" or "All 30 days." The response options were coded as 0 and 1. Zero was given to those who responded with "0 days" and 1 was given to those who reported some cigarette use over the last 30 days, so those who responded with "1 or 2 days," "3 to 5 days," "6 to 9 days," "10 to 19 days," "20 to 29 days" or "All 30 days." This dichotomous coding does lose some information about cigarette use (i.e., it does not differentiate those students who smoke on a regular basis and those who do not); however, it efficiently identifies those students who smoke some *at all* versus those who do not. This latter distinction is important to this study because positive social environments are important protective factors that guard against adolescent cigarette use (Carlo, 2011); and these protective factors are important even for one time use of cigarettes. One time cigarette use can be detrimental to health outcomes

because those who smoke even once can become addicted and continue down a trajectory of continued use (University of Massachusetts Medical School, 2007).

Alcohol use was created from the question "On how many occasions have you had beer, wine, or hard liquor during the past 30 days?" The response options were: "0 days," "1 or 2," "3 to 5," "6 to 9," "10 to 19," "20 to 29" or "40+" occasions. The response options were coded as 0 and 1. Zero was given to those who responded with "0 occasions" and 1 was given to those who reported some alcohol use over the 30 days, so those who responded with "1 or 2 days," "3 to 5 days," "6 to 9 days," "10 to 19 days," "20 to 29 days," or "40+" occasions. This dichotomous coding is a data reduction technique that admittedly loses a lot of information about alcohol use (i.e., it does not differentiate those students who drink on a regular basis and those who do not); however, it efficiently identifies those students who drink some *at all* versus those who do not. This latter distinction is important to this study because positive social environments have been shown to be important protective factors that guard against adolescent regular use of alcohol (Carlo, 2011) and these protective factors may be important for guarding against even one time use of alcohol.

Control variables. Important control variables include sex (male, female= reference), race (American Indian, Asian, African American, Hispanic, Pacific Islander, White=reference), parental education (Some grade school/less/some high school, Completed high school/ some college, Completed college/graduate or professional =reference), and student grade (6th, 8th, 10th, 12th=reference).

Grade was used as a substitute for adolescent stage and age group. This substitution provides a more reliable way of analyzing the data because of the sampling

techniques used. This substitution fits with aims of this research because each grade has a general age range that matches closely to the various stages within adolescence. In the 2011 PNA data, for 6th graders (i.e., early adolescence) 99% were between 11 and 12 years old. For 8th graders (i.e., early to middle adolescence) 99% were between the ages of 13-14 years old. For 10th graders (i.e., middle to late adolescence) 99% were between the ages of 15 and 16 years old. For 12th graders (i.e., late adolescence) 99% were between 17 and 19 years old.

Research Design and Analyses

This study used SAS PROC SURVEYLOGISTIC command to adjust for the complex survey sample design, including designs with stratification, clustering, and weighting, into the analysis. The SURVEYLOGISTIC procedure uses discrete response survey data and fits linear logistic regression models while incorporating the sample design into the analysis. This tool creates design-based variances using the Taylor series linearization method. When there are primary sampling units (PSUs), or clusters (classrooms), as in this sample design, the procedure estimates the variance from the variation among the PSUs thus accounting for the complex design of the study.

After listwise deletion of all variables, the analytic sample used here is 17,9226 observations, this represents 27% of the original sample from the 2011 Utah PNA (N= 48758). Data that are missing from key analysis variables were dropped. There were no detectable patterns of missing data between the dependent and independent variables. This sample continues to be representative of adolescents in Utah because selection was systematically done according to the survey methodology.

Aims one and two were tested using 2011 Utah PNA data. First, bi-variate models were run between positive social environments and depressive symptoms. This was done in order determine if independent variables of interest were related to depressive symptoms separately. Positive social environment variables were then added into the models one at a time until all positive social environment variables were in the model. This was done in order to determine if positive social environments had overlapping effects. Next, a model was constructed that consisted of all control variables (sex, parental education, race), positive social environment variables, and possible mediator variables: prosocial behavior and 30 day alcohol and cigarette use. The purpose of this model was to determine if prosocial and risky behaviors are possible behavioral mechanisms between positive social environments and depressive symptoms. In the final model, interaction effects were assessed between each positive social environment and grade on depressive symptoms.

Based on the findings of previous research, I added the most distal positive social environments (neighborhood) to the models because of their typically smaller effects and moved towards the more proximal positives social environments (friends) which typically have larger effects (Cooper, 1985; Gentry, 2002). These findings drove the method for starting with positive community environment in the model followed by the addition of school, family, and then peer group. Also, due to previous research which highlights developmental differences among stages of development within adolescence (Smetana, 2006), a possible interaction effect between grade and positive social environment on depressive symptoms was tested.

Results

Tables 6. and 7. show the distribution of the sample within each variable. The counts are unweighted and the percents are weighted in order to highlight how many observations were dropped from the analytic subsample due to missing observations. When data have missing values on key weighting variables then they are not given a weight and as a result are dropped from the analytic sample. Only about 3% of the analytic sample was dropped because of missing weights.

As shown in Table 6., about 73% of the sample was White with Hispanics being the next most prevalent group at 12%. About 60% of the sample had parents who are least graduated from college and about 34% who had parents who at least completed high school. Males comprised about 52% of the sample and females about 48%. Additional descriptive statistics comparing the characteristics of the subsamples are located in Table 6.

As shown in Table 7., the overall mean for depressive symptoms was 7.60 on a scale of 4-16. Tenth graders reported the highest mean at 7.84 and 6th graders reported the lowest mean at 7.42. The statistical test, ANOVA, found a significant difference in depressive symptom means across grades.

The overall mean for positive community environment was about 7.13 on a scale of 3-12. Tenth graders reported the lowest mean of 6.97 while 6th graders reported the highest mean at 7.40. The overall mean for positive school environment was 14.72 on a scale of 5-20. Sixth graders reported the highest mean of 14.91 and 8th graders reported the lowest mean at 14.47. The overall mean for positive family environment was 9.23 on a scale of 3-12. Sixth graders had the highest mean at 9.80 and 12th graders with the

lowest mean of 8.92. The overall mean for positive peer environment was 18.67 on a scale of 5-25; 12th graders reported the lowest mean at 18.13 and 6th graders reported the highest mean at 19.65.

About 63% of the sample reported having some level of prosocial behavior. Only about 4% reported using cigarettes and about 8% used alcohol in the last 30 days. While the reports of prosocial behaviors did not vary much between 6th, 8th, 10th and 12th grades, the prevalence of cigarette and alcohol use varied much more over the grades. For example, only about 1% of 6th graders reported using cigarettes over the last 30 days, whereas about 7% of 12th graders reported using cigarettes over the past 30 days. The same pattern can be seen with alcohol use. About 1% of 6th graders reported using alcohol over the last 30 days, whereas about 16% of 12th graders reported using alcohol over the past 30 days.

Before model building, the depressive symptoms scale was regressed in a bi-variate model with each positive social environment variable. Each positive social environment was significantly (p<.001) related to depressive symptoms. As shown in Table 8., the coefficients for positive community, school, family, and peer environments were -.39,-.35, -.68, and -.24, respectively, suggesting that positive social environments are associated with fewer depressive symptoms.

Table 8. also presents estimates from multivariate linear regression models showing the negative associations between positive social environments and depressive symptoms score. Overall, these results indicate that each positive social environment has

a main negative effect on depressive symptoms while controlling for all other positive social environments, behaviors, sex, grade, parental education, and race. Through a series of nested models, the general pattern showed (Models 1-4) that with the addition of each new positive social environment, the effect of other positive social environment variables on depressive symptoms was reduced, but not completely, suggesting that each positive social environment share variance in the depressive symptoms score but continue to have a main effect.

In the full model, family environment, relative to the other domains of the positive social environment, had the largest relative effect size on depressive symptoms. A one unit increase in positive family environment decreased the depressive symptoms score by .50 (p<.001). The next largest negative effects were positive school and friend environments with same size effect (-.08, p<.001), followed by positive community (-.07, p<.001). Overall, the results of these nested models suggest that positive family environment has the strongest protective effect against adolescent depressive symptoms when compared to other positive social environments.

In the full model, those without prosocial behavior had a higher depressive symptom score when compared to those with prosocial behavior (.13, p<.05). Also, not participating in risky behaviors like cigarette (-.45, p<.05) and alcohol (-.26, p<.05) use was also associated with a lower depressive symptom score. The addition of these variables did not greatly change the effect of positive social environments on depressive symptoms in the full model or affect the model fit.

In the full model, males had a lower depressive symptom score than females: for males, the depressive symptom score was .94 (p<.001) points lower than for females.

Also, those with parents who had at least some grade school or some high school and those who parents had some college had a higher depressive symptom score than those who parents had at least a graduate or professional degree .48($p<.001$) .20 ($p<.01$), respectively. Asians (.47, $p<.01$), African Americans (.51, $p<.05$), Pacific Islanders (.60, $p<.01$), and "Other" (.27, $p<.01$) had higher depressive symptom scores when compared to Whites in the final model. Sixth graders (.39, $p<.001$), 8th (.18, $p<.05$), and 10th (.38, $p<.001$) graders had higher depressive symptom scores when compared to 12th graders. These results confirm that depressive symptoms are not only affected by differences in positive social environments and related to behaviors but also by factors related to age, gender, and race.

Interaction effects were found when grade*positive social environment were entered into the model (positive community*grade, $p<.001$; positive school*grade, $p<.008$; positive family*grade, $p<.001$; positive peer*grade, $p<.001$). Table 9. presents models for each grade in order to tease out the differences in positive social environmental effects on depressive symptom score.

In grade-stratified models, controlling for all positive social environments, behaviors, parental education, sex, and race, positive community environment was negatively associated with depressive symptoms for 6th (-.07, $p<.01$), 8th (-.07, $p<.01$), and 10th (-.09, $p<.01$) graders but not for 12th graders. Positive community environment had the largest effect on 10th graders and had equally small effects on 6th and 8th graders. Positive school environment was negatively associated with depressive symptoms across all grades, 6th (-.10, $p<.001$), 8th (-.08, $p<.01$), 12th (-.11, $p<.01$), except for 10th graders. The largest effect was on 12th graders, where a one unit increase

in positive school environment meant a .11 lower depressive symptom score, whereas for 8th graders positive school environment had the smallest negative effect (-.08, $p<.01$). Positive family environment had the largest protective effects and was also significantly associated with depressive symptoms across all grades relative to other positive social environments, 6th (-.48, $p<.001$), 8th (-.52, $p<.001$), 10th (-50, $p<.001$), and 12th (-46, $p<.001$). It had the largest effect on 8th graders (-.52, $p<.001$), and the smallest effect on 12th graders. Positive peer environment was negatively related to depressive symptoms in 6th (-.14, $p<.001$), 8th (-.10, $p<.001$), 10th (-.09, $p<.001$), and 12th (.04, $p<.01$) grades. It had the largest negative effect on 6th graders (-.14, $p<.001$), and the smallest negative effect on 12th graders (.04, $p<.01$). These findings suggest that positive social environments have differential effects on adolescent depressive symptoms and are sensitive to developmental stages within adolescence.

Discussion

Using a representative sample of adolescents in Utah obtained from the Utah Prevention Needs Assessment, this analysis explored the influence of positive social environments on adolescent depressive symptoms over the course of adolescence. In particular, the analyses focused on whether those adolescents who reported higher levels of positive social environments at the community, school, family, and peer group level also reported lower depressive symptoms. Positive social environmental effects on depressive symptoms were then assessed for each grade in order to highlight how these relationships vary over the course of adolescence.

In sum, having elevated levels of positive social environments (community, school, family and peer) meant that adolescents had lower depressive symptoms, and these relationships differed depending on adolescent stage. Although, prosocial and risky behaviors had independent effects on depressive symptoms, they did not greatly mediate the effects of positive social environments on depressive symptoms. Thus, it seems that positive social environments may have direct influence as protective factors against depressive symptoms through their provision of social support or at least work through other potential mechanisms not tested in this paper.

The protective effects of positive social environments on adolescent depressive symptoms are complex. However, the findings of this study help to clarify at least one important path, positive social environments may directly protect against depressive symptoms through positive relationships and social support from neighbors, teachers, parents, and friends (Amato, 2000; Brooks-Gunn, 2008; Simmons, 1987; Wang, 2012) and not through behavioral mechanisms of prosocial and risky behaviors. Positive social environments may help to reduce depressive symptoms because they provide instrumental aid and various kinds of support for overcoming disappointments or stressful events that can lead to depression (Bliese, 2001; Bond, 2005).

Positive family environment had the relatively largest protective effect on adolescent depressive symptoms. This finding was evident across all grades suggesting that warm and supportive family relationships are important to reducing the risk of adolescent depression (Amato, 2000). This finding supports other research which has found that when compared to friends and other social environments, families play an important role in mitigating stressors that may lead to depression. For example, one

study found that adolescents used family social support relatively more often than friend social support when coping with stressors (Kobus, 2000). However, research has also found that movement through adolescence means shifting from family to friends as important figures in development (Gentry 2002). The finding in this study, that family plays a large enduring role throughout adolescence relative to friends, is likely due to the nature of depressive symptoms and its relationship to self-esteem. Families provide a kind of enduring aid and support that is important to bolstering self-worth and self-esteem (Paterson, 1994), which then helps in dealing with stressful situations (King, 1993) and lower the risk of depression (Bond, 2005).

Adolescent stage (early, middle, late) also plays an important part in how positive social environments affect depressive symptom scores. These results revealed that the effect of positive social environment on depressive symptoms varied depending on the grade of the adolescent. In general, for 12th graders, positive social environments offered less protection from depressive symptoms when compared to other grades. For example, most of the protective effects for 12th graders were generally smaller when compared to the effect of these same environments for other grades. These findings suggest that the social, behavioral, cognitive, and physical changes that happen throughout adolescent (Smetana, 2006) influence how positive social environments impact adolescents at different stages of growth (Gentry, 2002; Kobus, 2000), especially when dealing with factors related to depression. For example, as adolescents age and develop more refined cognitive capacities, they are less likely to let emotions determine their happiness and stress levels (Larson, 2002), they are more able to deal with factors like stress related to

depression and thus positive social environments may have weakened protective effects against depression.

These findings add to the current literature on adolescent depression by highlighting how several levels of positive social environments may concurrently and directly influence adolescent depressive symptoms. Since the proposed behavioral mechanisms (prosocial and risky behaviors) seemed to show little mediation effect, future research should examine other hypothesized developmental mechanisms of positive social environments and depressive symptoms like low self-esteem (Trzesniewski, 2006). However, the findings of this study are important because positive social environments, possibly through the provision of social support, seem to directly reduce depressive symptoms.

Limitations

Several limitations in this study are noteworthy. In terms of data, depressive symptoms were self-reported, and thus have the potential for errors in internal validity. However, the PNA honesty score and elimination technique helps eliminate extraneous bias in the data. Furthermore, the depressive symptom scale used here has not been validated as a scale that can predict the possibility of future depression.

Due to the cross-sectional nature of this study, causal inferences are limited in the findings. Future research should address these questions using a prospective design that has the ability to focus on developmental stages and related changes in adolescence. A data set of this type would allow for a nuanced examination of the possible causal effects of positive social environments on adolescent depression and how changes that occur

during adolescence are related to these concepts. Finally, this study only tested one of many possible behavioral mechanisms (Blum, 2002) and future research should consider other behavior and feelings may act as possible mechanisms between positive social environments and depression.

Conclusion

In general, this study highlighted the importance of positive social environments as protective factors against depressive symptoms over the course of adolescence. Specifically, this study showed how positive social environments affect the development of adolescent depressive symptoms directly, and possibly through influence other social environments. Furthermore, the idea that adolescence is more than just one transitional time period, but rather encompasses many transitions and turning points was an important finding of this study. This was highlighted in how the protective effects of positive social environments on adolescent depressive symptoms changed according to adolescent developmental stage. Understanding the relationship between positive social environments and depression over the course of adolescence is an important step towards understanding health over the life course due to the lasting effects of adolescent depression on future social and health development (Fergusson, 2005; Pine, 1999).

Overall, these findings highlight that there are several levels of positive social environments which serve as protective factors against adolescent depressive symptoms, however, the strength of these effects may depend on adolescent stage. This information can aid policy makers and grant funders in determining which environmental changes should be a priority and at what age these changes will be most beneficial in reducing the

risk of adolescent depression. However, given the results, there appears to be no replacement for family, and policy makers and public health campaigns should not only highlight adolescence as a time of change and stress, but also provide education for parents to help them understand the changes that occur during this time and ways in which they can provide warm and supportive atmospheres.

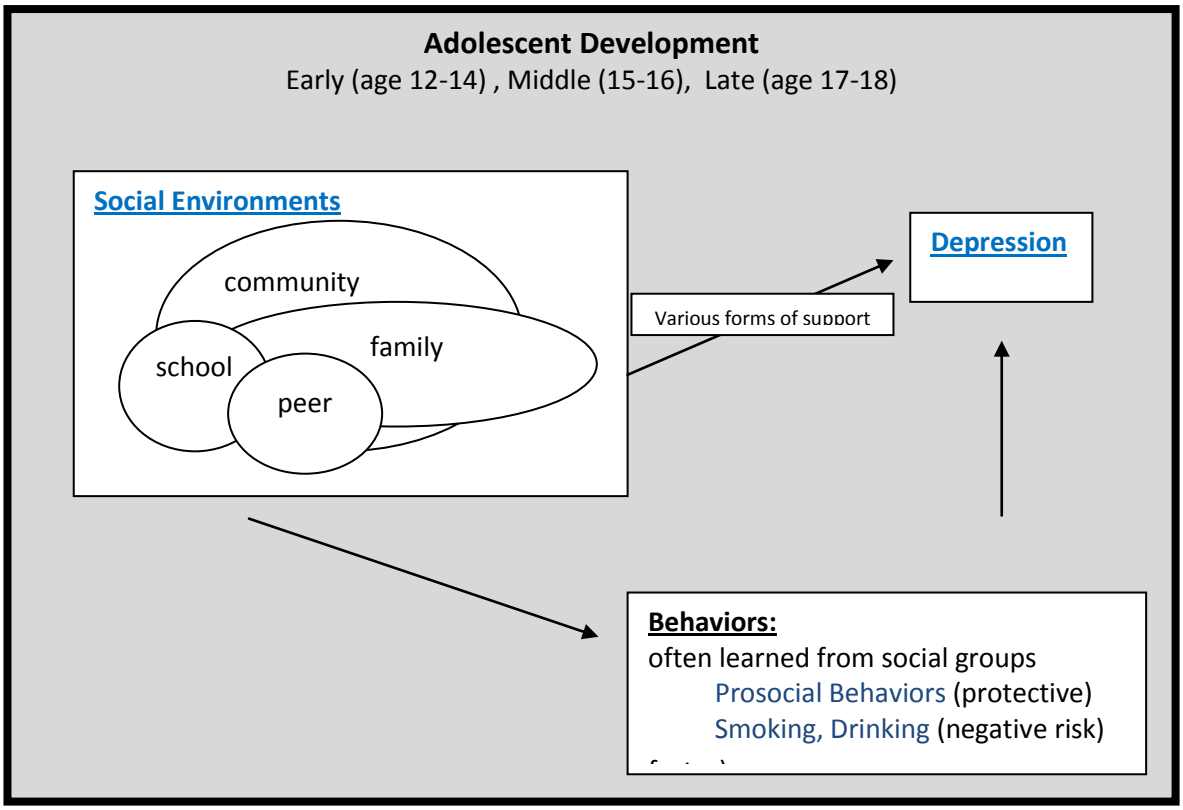


Figure 4. Social Environmental Pathways to Adolescent Depression.

Table 6. Unweighted Sample Sizes and Weighted Percents of Demographic Variables.

	Total Sample (n=22091)
Sex	
Male	10828 (52%)
Female	11263 (48%)
Parental Education	
Some Grade school/Some High School	1184 (6%)
Some College	6567 (34%)
Graduate or Professional	11257 (60%)
Race	
American Indian	412 (2%)
Asian	427 (2%)
African American	337 (1%)
Hispanic	2579 (12%)
Pacific Islander	347 (2%)
White	16287 (73%)
Other	1702 (8%)

Data source: Utah Prevention Needs Assessment 2011

Table 7. Unweighted Sample Sizes and Weighted Percents of Positive Social Environments, Behavioral Mechanisms, and Depressive Symptoms by Grade.

	Total Sample (n=22091)	6th Grade (n=6933)	8th Grade (n=6005)	10th Grade (n=5120)	12th Grade (n=4033)
Depressive Symptoms*	Mean, 7.60	Mean, 7.42	Mean, 7.72	Mean, 7.84	Mean, 7.56
[Observed Range 1-16]	SE, .02	SE, .03	SE, ..03	SE, .03	SE, .04
Positive Community Environment*	Mean, 7.13	Mean, 7.40	Mean, 7.07	Mean, 6.97	Mean, 7.00
[Observed Range 3-12]	SE, .02	SE, .03	SE, .03	SE, .04	SE, .04
Positive School Environment*	Mean, 14.72	Mean, 14.91	Mean, 14.47	Mean, 14.71	Mean, 14.82
[Observed Range 5-20]	SE, .01	SE, .03	SE, .03	SE, .03	SE, .04
Positive Family Environment*	Mean, 9.23	Mean, 9.80	Mean, 9.07	Mean, 8.93	Mean, 8.92
[Observed Range 3-12]	SE, .02	SE, .03	SE, .03	SE, .03	SE, .04
Positive Peer Environment*	Mean, 18.67	Mean, 19.65	Mean, 18.34	Mean, 18.43	Mean, 18.13
[Observed Range 5-25]	SE, .03	SE, .05	SE, .06	SE, .06	SE, .07
Prosocial Behavior*					
No	7815 (37%)	2464 (37%)	2138 (38%)	1825 (38%)	1388 (36%)
Yes	14083 (63%)	4392 (63%)	3815 (62%)	3262 (62%)	2614 (64%)
30 Day Cigarette Use*					
No	20758 (96%)	6667 (99%)	5662 (97%)	4754 (94%)	3675 (93%)
Yes	820 (4%)	43 (1%)	179 (3%)	288 (6%)	310 (7%)
30 Day Alcohol Use*					
No	20164 (92%)	6759 (99%)	5555 (94%)	4532 (89%)	3318 (84%)
Yes	1625 (8%)	89 (1%)	340 (6%)	525 (11%)	671 (16%)

*Significant difference across grades, $p < .05$, as assessed by ANOVAs and Chi-square
Data source: UtahPNA 2011.

Table 8. Linear Regression Coefficients and Standard Errors of Positive Social Contexts on Depressive Symptoms.

	Bivariate	*Model 1 (n=18990)*	*Model 2 (n=18668)*	*Model 3 (n=18442)*	*Model 4 (n=17834)*	*Model 5 (n=17664)*
Positive Community Environment	-.39 (.007)***	-.34 (.019)***	-.27(.011)***	-.12 (.011)***	-.08 (.012)***	-.07 (.012)***
Positive School Environment	-.35 (.007) ***		-.23 (.013)***	-.11 (.012)***	-.09 (.128)***	-.08 (.013)***
Positive Family Environment	-.68 (.008)***			-.54 (.015)***	-.51 (.015)***	-.50 (.015)***
Positive Peer Environment	-.24 (.004) ***				-.09 (.007)***	-.08 (.007)***
Prosocial Behavior						
Yes†	-	-	-	-	-	-
No						.13 (.061)*
30 Day Cigarette Use						
Yes†	-	-	-	-	-	-
No						-.45 (.156)**
30 Day Alcohol Use						
Yes†	-	-	-	-	-	-
No						-.26 (.115)*
Grade						
6th		-.18 (.071)*	-.19 (.072)**	.25 (.070)**	.35 (.070)***	.39 (.071)***
8th		.06 (.069)	-.03 (.070)	.10 (.067)	.14 (.068)*	.18 (.068)*
10th		.31 (.072)***	.28 (.072)***	.31 (.069)***	.36 (.070)***	.38 (.070)***
12th†		-	-	-	-	-
Sex						
Female†		-	-	-	-	-
Male		-.85 (.049)***	-.89 (.049)***	-0.90 (.0468)***	-.95 (.047)***	-.94 (0.048)***
Parental Education						
Some Grade school /Some High School		1.22 (.116)***	1.18 (.117)***	.72 (.114)***	.52 (.116)***	.48 (.116)***
Some College		.51 (.056)**	.52 (.055)***	.33 (.053)***	.22 (.054)***	.20 (.054) **
Graduate or Professional†		-	-	-	-	-
Race						
American Indian		.63 (.254)*	.46 (.242)	.35 (.243)	.25 (.245)	.27 (.247)
Asian		.70 (.180)***	.69 (.181)***	.41 (.176)*	.45 (.174)**	.47 (.175)**
African American		.86 (.181)***	.87 (.186) ***	.63 (.199)**	.52 (.205)*	.51 (.203)*
Hispanic		..27 (.091)**	.29 (.100) **	.27 (.0925)**	.16 (.094)	.18 (.094)
Pacific Islander		.74 (.197)**	.80 (.201)***	.60 (.187)**	.66 (.189)**	.60 (.187)**
White†		-	-	-	-	-
Other		.54 (.094)***	.46 (.094)***	.34 (.097)***	.26 (.088)**	.27 (.087)**
Adjusted R^2		.13	.15	.25	.26	.26

Notes: * $p<.05$, ** $p<.01$, ***$p<.001$. † is the reference variable. Data source: Utah PNA 2011.

Table 9. Linear Regression Coefficients and Standard Errors of Positive Social Contexts on Depressive Symptoms. (Estimated from grade-stratified sub-samples).

	6th Grade (n=4476)	*8th Grade (n=4795)*	*10th Grade (n=4636)*	*12th Grade (n=3757)*
Positive Community Environment	-.07 (.022)**	-.07 (.022)**	-.09 (.025)**	-.05 (.025)
Positive School Environment	-.10 (.0255)***	-.08 (.022)**	-.04 (.025)	-.11 (.028)**
Positive Family Environment	-.48 (.030)***	-.52 (.028)***	-.50 (.027) ***	-.46 (.032)***
Positive Peer Environment	-.14 (.0153)***	-.10 (.013)***	-.09 (013)***	-.04 (.012)**
Adjusted R^2	.27	.35	.27	.20

Notes: * $p<.05$, ** $p<.01$, ***$p<.001$. Data source: Utah PNA 2011. All models controlled for prosocial behavior, 30 day cigarette and alcohol use, sex, parental education, and race.

CHAPTER 4

POSITIVE SOCIAL ENVIRONMENTS AND ADOLESCENT DEPRESSION ACROSS GENDERS AND OVER THE COURSE OF ADOLESCENCE

Introduction

The study of adolescent depression represents a major public health concern because it is the most widely reported disorder to occur during adolescence (Mulye, 2009) and it can have lasting implications on later life health. Adolescents who experience depression are likely to experience depression as adults (Ge, 2001; Pine, 1999) and have later life problems such as obesity (Goodman, 2002), low social support and self-esteem (Galambos, 2006), and unemployment (Galambos, 2006). As well, depressed adolescents tend to be more likely to exhibit academic problems, drop-out of school, and attempt suicide (Brooks, 2002; Eggert, 2002).

Although depression and the consequences of depression can affect both males and females during adolescence, unfortunately, the highest burden often falls on adolescent girls with a higher prevalence around 12-13% than boys at 4-5% (Adolescent Depression, 2013). Females experience higher depression rates, more severe symptoms, and longer lasting effects of depression than males. Females who are depressed during adolescence are also more likely to have mental health problems as adults than males

who are depressed during adolescence (Dekker, 2007). In contrast, girls' depression scores have been found to be slightly lower than boys' during childhood, however, this changes around the age of 13 when girls begin to have higher scores of depressive symptoms (Ge, 1994; Twenge, 2002). Furthermore, after the age of 15, girls and women are about twice as likely to be depressed as boys and men (Nolen-Hoeksema, 2001), and this gender gap in rates persists for the next 35 to 40 years (Cyranowski, 2000).

Social environments play an important role in adolescent depression. Through dynamic interactions and relations that occur within environmental contexts like community, school, family, and peer, adolescents are exposed to risk and protective factors that are related to adolescent depression (Lerner, 1998). Protective factors, such as social support, guard against the development of adolescent depression, whereas risk factors increase the likelihood of adolescent depression (Bond, 2005). Exposure to these risk and protective factors may change throughout adolescence along with changes that affect the salience of the social environments on adolescence development (Bauman, 1986; Laible, 2004). Furthermore, the salience of social environments on adolescent depression may differ between males and females with the protective effects of certain social environments becoming less salient for boys than for girls over time (Rueger, 2010), i.e., parental support remains an important protective factor against adolescent depression for both boys and girls over time, whereas support provided by school environments remain important for boys but not girls (Rueger, 2010). These findings highlight adolescence as a critical period for identification, prevention, and intervention of depression, and more importantly how gender differences that emerge during the

course of adolescence are key to understanding depression outcomes in adolescence and in adulthood.

Gender Differences in Depression during Adolescence

Adolescence is a time in human growth that is characterized by a great deal of developmental change. The beginning of adolescence is marked by the dramatic biological changes of puberty and usually ends with a transition into an adult role like marriage, parenthood, completion of education, or entrance into the labor force (Smetana, 2006). Adolescence is also filled with cognitive, emotional, behavioral, and social change (Collins et al., 2000). These changes are often not easy (Schulenberg et al., 2003) and adolescent development has often been characterized by theorists as a period of "storm and stress" (Arnett, 1999).

Movement through these cognitive, emotional, behavioral, and social changes often coincides with risk factors related to adolescent depression like stress and anxiety (Dumont, 1999; Fabes, 1999; Fleming, 1990; Rew, p. 11; White, 1987). Females tend to be more exposed to the stress and anxiety that come along with these changes than males, and this may be factor in why females have depression rates twice as high as males (Nolen-Hoeksema, 2001). For example, higher levels of stress, anxiety, and self-consciousness have been related to pubertal changes in females, especially those who mature earlier than their peers (Rierdan, 1997). Exposure to more differentiated sex roles may also be related to higher depression rates in adolescent females than in adolescent males. For example, sex roles take on new importance as adolescents' bodies become more sex-differentiated, and girls begin to compare themselves with the standard female

stereotypes; they may then become anxious and dissatisfied with their body, which in turn has associated with depressed mood (Wichstrom, 1999). These developmental changes may also be related to increases in depression for girls over the course of adolescence.

Females also tend to have different coping strategies that may make them more prone to depression (Nolen-Hoeksema, 2001). Adolescent girls are more likely to use maladaptive coping strategies like rumination when dealing with common stressors like family stress (Hampel, 2004). For example, research has found that girls are more likely than boys to react to negative stressful events in the family due to differences in coping styles (Hankin, 1999).

Although, research has shown that females tend to have more negative coping styles than males (Hampel, 2004), research has also shown that when females do engage in positive coping styles related to lower rates of depression (Cohen, 1985) like utilizing social support (Bandura, 2009), they tend seek it from several sources like family, friends, teachers, etc. (Rueger, 2010). In comparison, when males utilize social support as a coping mechanism, they often seek support from one or two specific sources like family, friends, or teachers (Rueger, 2010). Also, the type of support that is sought may also depend on the developmental stage during adolescence and the differing value that males and females place on social relationships as they age (Gilligan, 1982). Thus, understanding the interplay between gender and age throughout adolescence is important to understanding how and why certain factors may be related to adolescent depression.

Life course theory provides a useful way of looking at gender and age related differences to depression because it provides a framework for understanding human

development embedded within social contexts over time. In general, life course theory highlights the importance of timing and larger social contexts on developmental outcomes. Timing is concerned with concepts of transitions and turning points on human development at crucial points during the life course (Elder, 2004). These could include things like puberty and the transition into gender specific roles and responsibilities (Nolen-Hoeksema, 2001). The effects of these transitions and turning points on developmental outcomes are not only affected by gender and timing but also by the networks of shared relationships in an individual's life. Networks of shared relationships are fostered within important developmental social contexts and are crucial because the actions of one person in a group can have resounding effects on other members of the group (Elder, 2004). For example, parents must act as "advocates or brokers" for their children's receipt of community resources (Leventhal, 2000). For example, the effect of neighborhood resources on adolescent outcomes may be more indirect by operating through familial processes and shared relationships among parents and neighbors (Leventhal, 2000). Another important element to shared relationships is that they provide exposure to behavior role models and to opportunities and constraints for learning and social interactions (Ensminger, 1992). Life course theory provides a useful framework for understanding how social environments may affect adolescent depression through shared relationships and how these effects may vary according to gender and the age of the adolescent.

Social Contexts and Adolescent Depression across Gender Developments

Each phase of adolescence is concerned with different social, cognitive, and physical maturation, and thus, the effect of any social environment may be more or less salient over the course of adolescence (Bauman, 1986; Laible, 2004). For example, in early adolescence, children are still quite reliant on parents (Hurd, 2005). However, as they get older and gain more independence, peer groups may play a larger role (Gentry, 2002). This shift means that he/she begins to rely less on their family for emotional and social support (i.e., positive social environments) and more on their friends (Cooper, 1985). This shift may be especially visible in girls because they tend to rely on and develop more social relationships as they age (Frydenberg, 1993; Gilligan 1982). Therefore, over the course of adolescence, it is important to consider how gender is related to the influence of any one social environment (e.g., neighborhoods, schools, family, and friends) on developmental outcomes and how social environments may positively or negatively affect adolescent behaviors or emotion. Of particular concern in this paper is whether these social environments differentially affect or protect male and female adolescents, young, middle, or older adolescents, from exhibiting depressive symptoms.

Research on adolescent depression has suggested that social environments such as neighborhoods, schools, families, and peer groups, might be associated with an individual's depression risk (Bond, 2005). On the one hand, social environments may positively influence an individual by providing support (Bliese, 2001) or by modeling positive behaviors, all of which protect against depression (Ensminger, 1992). Support

and positive behaviors protect against depression by creating positive ways of dealing with stress and increasing ones' sense of self-worth (Hirsch, 1985), this effect is especially strong for females (Bolognini, 1996). On the other hand, social environments may also increase the risk of adolescent depression by negatively affecting individual behaviors through provision of poor societal mores and norms that encourage risky behaviors (Millstein, 2002). Social environments may also lack social support that helps individuals cope with the negative effects of stressful atmospheres (Bliese, 2001), thus becoming depressed (Jessor, 1991; Veselska, 2009).

Social environments that are positive social environments have been associated with a decreased likelihood of depression in adolescence (Bond, 2005). Being positive in nature means that they provide confirmation of social identity, instrumental aid, and various forms of support (emotional, informational and appraisal) to group members (Cassel, 1974; Cobb, 1976; Cohen and Wills, 1985; House, 1981). Positive social environments and the shared relationships within them can provide life training and support to adolescents which serve to protect them in the face of increased risks that may lead to depression (Croll, 2002). Specifically, positive social environments that provide various forms of support create resiliency and competencies in adolescents that are associated with a decreased risk of depression (Calvert, 1997). These can include neighbors who create a sense of social cohesion within the neighborhood thereby fostering self-esteem and a lowered risk of depression (Pals, 2012), teachers who provide warm supportive atmospheres (Wang, 2012), parents who provide emotional support (Amato, 2000), and friends who provide warm and supportive friendships (Millings, 2012). Furthermore, the salience of each positive social environment as a protective

mechanism against depression may vary between boys and girls due to differences in physical, emotional, and psychological developments throughout adolescence (Copeland, 1995; Frydenberg, 1993; Nolen-Hoeksema, 2001; Rueger, 2010).

Gilligan (1982) suggests that over time, as girls develop gender related roles and responsibilities, they may begin to value relational intimacy in a different way or to a different degree than boys. This may mean that they invest more time and effort into relationships than boys. This theory suggests that identity development for girls may be interrelated with relationship development (Rueger, 2010) and that social resources may play a more significant role over time in the well-being of girls than boys (Copeland, 1995; Frydenberg, 1993). In contrast, as adolescent boys develop and experience different gender related roles and responsibilities (Hill, 1983), they may also begin to adopt stress reduction activities or engage in diversions (Copeland, 1995) like playing sports a as coping strategy (Frydenberg, 1993).

The developmental differences between boys and girls may also mean that the protective effects of certain positive social environments on adolescent depression may also differ. For example, neighborhood and school environments seem to protect against negative outcomes more for boys than girls (Katz, 2012; Lifrak, 1997). Previous research has suggested that within communities and schools, boys can develop positive relationships based on mutual interests and physical activities (Frey, 1996) that lower the risk of depression. In contrast, positive friend environments have been associated with lower levels of depression in girls but not boys (Slavin, 1990), and this might be related to the idea that as girls mature they invest more effort in having intimate social relationships than boys (Rueger, 2010) which lowers depression risk (Millings, 2012) .

The influence of positive family environment on lowered depression risk is less clear regarding gender differences. One study found that parental support had similar effects for both boys and girls (Ystgaard, 1997) while another study found that parental support had a stronger impact on depression outcomes in girls than for boys (Colarossi, 2003).

Current Study

This study will examine gender differences in the influence of positive social environments on depressive symptoms over the stages of adolescence. This approach will add to the literature on gender and age differences in adolescent depression by examining these differences together in a more refined analysis that will highlight gender differences over the course of adolescence (ages 12 to 17). Highlighting potential gender differences within each grade may explain why findings in the area of family influences on depression are mixed (Colarossi, 2003; Ystgaard, 1997).

The following analysis did not control for prosocial and risky behaviors because analyses from part 2 showed that these specific behaviors do not mediate the relationship between positive social environments and depressive symptoms. Furthermore, preliminary gender analyses showed no differences regarding these behaviors as possible mechanisms for either boys or girls.

Considering the shifting role of social relations during the developmental stages of adolescence and how these differ across gender, this study has two primary aims. The first aim was to i*nvestigate the differences between males and females in terms of the role of positive social environments on adolescent depressive symptoms.* Based on previous literature positive social environments were related to lower depressive symptoms, with

the strongest effects associated with a strong or positive family environment (Bond, 2005). Furthermore, based on developmental differences between males and females the role of positive social environments on adolescent depressive symptoms may also differ between sexes (Nolen-Hoeksema, 2001). Females tend to rely on social relationships, whereas males tend to rely on stress reduction activities or diversions (Copeland, 1995) to deal with factors related to adolescent depression. Accordingly, I hypothesized that all positive social environments will have main effects on depressive symptoms for both males and females, but that the strength of these effects will differ according to each sex. Overall, positive social environments will have stronger effects on girl depressive symptoms than boys. The goal of this research aim is to identify the potential protective effects of each type of positive social environment on depressive symptoms between boys and girls.

The second aim was to *examine how positive social environments on depressive symptoms differ by grade i.e., adolescent stages of development (early, middle, late) and between males and females.* The goal of this research aim is to determine if the relationship between positive social environments on depressive symptoms changes over the course of adolescence between boys and girls given the unique developmental changes that also occur (Copeland, 1995; Smetana, 2006). I hypothesized that these relationships will differ according to adolescent stage (i.e., grade) and sex. For example, young adolescent girls may find that family support (Rueger, 2010) is often very important in dealing with factors related to depression, whereas middle to late adolescent girls may begin to rely more on peers for support (Ystgaard, 1999). Furthermore, for young adolescent boys, parents, school, and peer support are important sources of support

(Rueger, 2010), whereas for middle to late adolescent boys, parental support maybe the most important type of support (Ystgaard, 1999) related to depression. The changing relative importance of family support over time and between boys and girls is just one example of how the salience of positive social environments on adolescent developmental outcomes may vary over the course of adolescence and differ between males and females. An important feature of this study is the large sample size that allows for a refined analysis that highlights both the different influence of positive social environments on adolescent depressive symptoms over time and the difference in these changes between boys and girls.

Methods

Data

Data for this study came from the Utah Prevention Needs Assessment (PNA) 2011 survey, and was collected by the Utah Human Services Division of Substance Abuse and Mental Health. The PNA is a cross-sectional survey that is administered every other year. The PNA is primarily administered to students in grades 6, 8, 10, and 12. The PNA is also administered to some 7th, 9th, and 11th graders. The decision to administer the survey to 7th, 9th, and 11th graders is made individually by each school and thus makes these data not generalizable for those grades. Thus, this analysis focused only on the samples from grades 6, 8, 10, and 12.

Aside from the advantage of its size, the PNA uses sampling techniques and weights that make it representative of students in Utah from middle school to high school. The PNA uses a multistage area probability sample design and sampling weights are provided for 2011. The first stage of sampling sampled schools (n=455) within all

school districts in Utah. The second stage consisted of a random sample of classes within schools.

Preparing the data also included giving students an honesty score and those who were "dishonest" in answering questions on the survey were not used in the analyses. Students with honesty of "0" were deemed to be dishonest according to at least one of the five following criteria: 1) used drugs (not including alcohol or tobacco) on more than 120 occasions in the past 30 days, 2) reported using a fictitious drug, 3) reported that they were "not honest at all" in completing the questionnaire, 4) marked more 30-day use for a substance than their lifetime use more than one time, or 5) their age and grade did not match, such as a student 19 years of age who marked grade 6. Only the honest students in grades 6, 8, 10, and 12 were used to weight the data, about 3% of the data were not weighted because of "dishonest" students. The weighting variable is based on school, gender, and grade.

The sample from 2011 included a representative sample of Utah 6th, 8th, 10th, 12th graders (N= 48758). There is one major limitation in this dataset. First, due to reasons of efficiency, only half the sampled students in 2011 received a full version of the survey which assessed the variables used to measure the full array of positive social environments; the other half received a form that assessed only a portion of the variables used to measure positive social environments. Only half the respondents were used in this study in order to ensure that only those who were surveyed for all positive social environments were included in the analysis (n= 22091). Thus, this study consisted of only half the records to ensure that only those who were surveyed for all positive social environments were included in the analysis (n=22,091). This approach did not hinder

analyses because of the random sampling of the two forms and because there was still a large sample to be analyzed. The full set of observations for 2011 was 48,758, thus about 50% of observations were lost due to this sampling design. The strengths of this data set included its large numbers which allowed for a refined analysis across gender and grades, the representative nature of Utah students, and the assignment of "honest" and "dishonest" respondents.

About 73% of the sample was White, with Hispanics being the next most prevalent group at 12%. About 60% of the sample had parents who are least graduated from college and about 34% who had parents who at least completed high school. Males comprised about 52% of the sample and females about 48%.

Measures

Dependent variables. Depressive symptoms scale was created from four different questions that tap into depressive symptoms. The questions which used child appropriate responses of "NO!(completely disagree), no (disagree), yes (agree), YES! (completely agree)" are: "At times, I think I am no good at all," "All in all, I am inclined to think that I am a failure," "In the past year, have you felt depressed or sad MOST days, even if you felt okay sometimes," "Sometimes, I think that life is not worth it" with a response of "NO! (meaning completely disagree)," "no (disagree)," "yes (agree)," "YES! (completely agree)." The response options to the questions were given values of 1-4 with "NO!" receiving a value of 1 and "YES!" receiving a value of 4. The theoretical range was 1 to 16, and the observed range was 4 to 16 meaning that everyone in the analysis answered all four questions (only 492 did not answer all 4 questions).

The validity of this construct was tested using factor analysis techniques. The factor analysis found that the variables used to create the depressive symptoms scale loaded onto just one factor with good validity (MSA was above .80). The variables also had a good correlation with a Cronbach alpha of .89. A study by McKenzie (2011) found that adolescent depression screening tests that assess at least four feelings of self-hatred and being unloved, such as this composite, performed almost as well as having all 13 Short Mood and Feelings Questionnaire (SMFQ; Messer, 1995) in predicating subsequent depression symptoms. Using this scale versus a certified index like the SMFQ has the advantage of assessing symptoms that can lead to future depression (Pine, 1999). This distinction is important because even having a few symptoms of depression in adolescence can strongly predict an episode of major depression in adulthood, even among adolescents who never experience major depression (Pine, 1999).

Only those who answered all four questions in the index were used in the final analyses thus making the observed range 4 (meaning they answered "NO!" to all four questions) to 16 (meaning they answered "YES!" to all four questions). A higher number on the scale means more depressive symptoms. The mean was 7.62 and was normally distributed.

Independent variables. This study draws on a multidimensional approach to measuring the social contexts to which each adolescent are exposed. All variables focus on whether the social contexts provide *positive* support or influence; and each variable measures a different domain of social context, including neighborhood, family, school, and peer environments. Each of the positive social environments' validity was tested using factor analysis techniques. Factor analysis found that the variables used to create

each positive social constructs all loaded onto just one factor with good validity (MSA was above .77). This measurement approach was derived from Arthur (2002), who used the same questions to create valid constructs of positive social environments.

Positive community context was created from three different questions that tap into positive social attributes of a neighborhood. The following questions using child appropriate responses of "NO! (completely disagree)," "no (disagree)," "yes (agree)," "YES! (completely agree)" are: "My neighbors notice when I do a good job," "People in my neighborhood are proud when I do well," " People in my neighborhood encourage me to do my best" with a response of "NO! (meaning completely disagree)," "no (disagree)," "yes (agree)," "YES! (completely agree)." The response options to the questions were given values of 1-4 with "NO!" receiving a value of 1 and "YES!" receiving a value of 4. The answers from each of the questions were added together to create a linear variable of positive community environment. This construct had a range of 3 to 12 with 3 meaning that they reported "NO!" on all three questions and 12 meaning that they reported a four or "YES!" on all three questions. The mean was 7.13 and was normally distributed. The Cronbach alpha for the five items was .88.

Positive school context was created from five different questions that tap into the potential positive influence of schools. These questions are: "In my school, students have lots of chances to help decide things like class activities," "There are lots of chances for students in my school to talk with a teacher one-on-one," "Teachers ask me to work on special classroom project," "I have lots of chances to be a part of class discussions or activities," and "I have lots of chances to get involved in school activities." The response to these questions were: "NO!," "no," "yes," or "YES!" Each response were given a

value of 1-4, with “NO!” given the value of 1 and “YES!” given the value of 4. The answers from each of the questions were added together to create a linear variable of positive school environment, with a range of 3 to 20. Higher numbers indicate higher levels of positive influence from school environments. The mean was 14.71 and was normally distributed. Cronbach alpha for the five items was .65.

Positive family context was created from three different questions that tap into the potential positive influence of families. These questions are: “My parents give me lots of chances to do fun things with them,” “My parents ask me what I think before most family decisions affecting me are made,” “If I had a personal problem, I could ask my mom or dad for help.” The response to these questions were: “NO!,” “no,” “yes,” or “YES!” Each response were given a value of 1-4, with “NO!” given the value of 1 and “YES!” given the value of 4. The answer from each of the questions were added together to create a linear variable of positive family environment with a range of 3 to 12. Higher numbers indicate a greater level of positive family influence. The mean was 9.23 and was normally distributed. The Cronbach alpha for the 3 items was .99.

Positive peer context was created from five different questions that tap into the positive influence friends may provide. These questions are: “Think of your four best friends (the friends you feel closest to), in the past year (12 months), how many of your best friends have:” “participated in clubs, organizations and activities at school,” “made the commitment to stay drug-free,” “tried to do well in school,” “liked school,” “regularly attended religious services?” The response to these questions “0-4 friends” with “0 friends” being given a value of 1 and “4 friends” being given the value of 5. The answer from each of the questions were added together to create a linear variable of positive

friend environment with a range of 5 to 20. Higher numbers indicate a greater level of positive peer influence. The mean was 18.66 and was normally distributed. The Cronbach alpha for the four items was .74.

Control variables. Control variables include demographic variables. These variables are sex (male=reference, female), race (American Indian, Asian, African American, Hispanic, Pacific Islander, White=reference), parental education (Some grade school/less/some high school =reference, Completed high school/ some college, Completed college/graduate or professional), and student grade (6th=reference, 8th, 10th, 12th).

Grade was used as a substitute for adolescent stage and age group. This substitution provides a more reliable way of analyzing the data because of the sampling techniques used. This substitution fits with aims of this research because each grade has a general age range that matches closely to the various stages within adolescence. In the 2011 PNA data, for 6th graders (i.e., early adolescence) 99% were between 11 and 12 years old. For 8th graders (i.e., early to middle adolescence) 99% were between the ages of 13-14 years old. For 10th graders (i.e., middle to late adolescence) 99% were between the ages of 15 and 16 years old. For 12th graders (i.e., late adolescence) 99% were between 17 and 19 years old.

Research Design and Analyses

This study used SAS PROC SURVEYLOGISTIC command to adjust for the complex survey sample design, including designs with stratification, clustering, and weighting, into the analysis. The SURVEYLOGISTIC procedure uses discrete response

survey data and fits linear logistic regression models while incorporating the sample design into the analysis. This tool creates design-based variances using the Taylor series linearization method. When there are primary sampling units (PSUs), or clusters (classrooms), as in this sample design, the procedure estimates the variance from the variation among the PSUs thus accounting for the complex design of the study.

After listwise deletion of all variables, the analytic samples used here were 8,549 for males and 9,285 for females. Combined, these data represent about 45% of the original sample from the 2011 Utah PNA. Data that are missing from key analysis variables were dropped. There were no detectable patterns of missing data between the dependent and independent variables. This sample continues to be representative of adolescents in Utah because selection was systematically done according to the survey methodology.

Aims one and two were tested using 2011 Utah PNA data. First, bi-variate models were run between positive social environments and depressive symptoms for both males and females. This was done in order determine if independent variables of interest were related to depressive symptoms. Second, depressive symptoms were regressed on a full model of all positive social environments and control variables: sex, parental education, and race by male and female. This was done in order determine if independent variables of interest were related to depressive symptoms while accounting for important control variables, and to examine differences between sexes. Finally, these models were stratified by grade in order to determine if there were sex differences across grades.

Based on the findings of previous research, these models were stratified by sex because males and females develop different styles in dealing with factors related to

depression (Nolen-Hoeksema, 2001). Differences in coping styles and exposure to risk factors may mean that males and females experience protective factors related to depression differently. For example, females tend to rely on social relationships, whereas males tend to rely on stress reduction activities or diversions (Copeland, 1995). Thus, the effects of each positive social environment variable on depressive symptoms were examined separately by sex.

Previous research has also found that developmental stages differ during adolescence (Smetana, 2006) and also differ between males and females (Compas, 1997; Ystgaard, 1997). This suggests that the effects of positive social environment on depressive symptoms may differ according to adolescent grade. Thus, I examined the effect of each positive social environment on depressive symptoms by grade.

Results

In Table 10., the overall mean for depressive symptoms was lower for males at 7.14 than for females at 7.89 on a scale of 4-16. Positive community score average was 7.11 for males and 7.16 for females on a scale of 3 to 12, although differences were not statistically different. Males (14.61) had a lower positive school environment average score than females (14.81) on a scale of 5 to 20. Males (9.17, 18.32) also had lower positive family and peer environment than females (9.29, 19.02) on a scale of 3 to 12 and a scale of 5 to 25, respectively.

In Table 11., 8th grade males had the lowest depressive symptom score at 6.98 and 10th grade females (8.18) had the highest depressive symptom score. Within each

grade, differences between males and females were significantly different. Also, differences across grades for each sex was significantly different.

As shown in Table 11., 6th grade females (7.64) had the highest average positive community score and 10th grade females had the lowest average score (6.89). Differences in positive community score were significantly between males and females for all grades except for 8th and 12th grade. Differences in positive community environment across grades was different for both boys and girls. For positive school environment, 6th grade girls had the highest average score (15.07) and 8th grade males had the lowest average score (14.32). Differences between males and females in positive school environment were significant in all grades. Differences in positive school environment across grades for each sex were also significant. For positive family environment, 12th grade males had the lowest average score (8.91) and 6th grade females (10.03) had the highest average score. The only sex difference in positive family score was found in 6th grade. However, differences within each sex across grades were significant. Finally, for positive peer environment, 6th grade females (20.17) had the highest average score and 12th grade males had the lowest score (17.94). There were sex differences in each grade and differences across grades within the same sex.

Depressive Symptoms

Before model building in the grade stratified models, the depressive symptoms scale was regressed in a bi-variate model with each positive social environment for both males (Table 12.) and females (Table 13.). Each positive social environment was significantly related ($p<.001$) to depressive symptoms. The largest effect for both males (-

.59, $p<.001$) and females (-.74, $p<.001$) was positive family environment. The smallest effect for both males (-.18, $p<.001$) and females (-.28, $p<.001$) was positive peer environment.

For males, the full unstratified model in Table 12., presents estimates from multivariate linear regression models showing the change in depressive symptoms score for males. Overall, these results indicate that each positive social environment has a main negative effect on depressive symptoms while controlling for all other positive social environments, sex, grade, parental education, and race. In the unstratified full model, 6th (.32, $p<.001$) and 10th (.20, $p<.05$) grade males had a higher depressive symptom score when compared to 12th grade males. For 8th grade males, those whose parents had some grade or high school (.83, $p<.05$) had a higher depressive symptom score than those who parents had at least a graduate or professional degree. Hispanic males in 10th grade had a lower depressive score than White males: for Hispanics, the depressive score was .69 ($p<.05$) points lower than for Whites. However, 12th grade male Hispanics (.86, $p<.05$) had a higher depressive score than White males.

Table 12. also presents estimates from the male multivariate linear regression models for each grade, showing differences in depressive symptoms scores across adolescent grades. Overall, these results indicate that the effect of each positive social environment on depressive symptoms varied depending on male adolescent stage. In the full unstratified model, all positive social environments had a negative effect on depressive symptoms. However, the size and significance of these effects depended on adolescent male grade. For example, in models for 6th and 8th grade males, all positive social environments had a negative effect on depressive symptoms, whereas for 10th

grade males only positive family (-.46, $p<.001$) and friends (-.11, $p<.001$) had a negative effect, and for 12th grade males, only positive family environment (-.46, $p<.001$) had a negative effect. Furthermore, the size of positive community and school effects stayed almost the same across models for 6th (-.08, $p<.05$; -.10, $p<.05$) and 8th (-.07, $p<.05$; -.13, $p<.05$) grade males, whereas for 10th and 12th grade males, these effects disappeared. Finally, the effect of positive family environment was fairly consistent in size across all models. For example, in the bivariate model, a one unit increase in positive family environment decreased male depressive symptoms by .59 ($p<.001$) and in the full unstratified model it decreased male depressive symptoms by .47 ($p<.001$). In the fully stratified models by grade, the effect of positive family environment ranged from -.45 ($p<.001$) for 6th grade males to -.47 ($p<.001$) for 8th grade males.

For females, Table 13. presents estimates from the multivariate linear regression models for females showing the change in depressive symptoms score over adolescent stages. In the full unstratified female model, 6th (.41, $p<.001$), 8th (.43, $p<.001$), and 10th (.54, $p<.001$) grade females had a higher depressive symptom score than 12th graders. Females whose parents had some grade or high school (.59, $p<.01$) and females whose parents had some college (.32, $p<.001$) had a higher depressive symptom score than females who parents had a graduate or professional degree. Asian (.67, $p<.05$) and Pacific Islander (1.18, $p<.001$) females had a higher depressive symptom score than White females.

Overall, these results indicated that the effect of each positive social environment on depressive symptoms varied by female adolescent stage. In the full unstratified model, all positive social environments had a negative effect on depressive symptoms for

females. However, the size and significance of these effects depended on female grade. For example, positive community environment had a negative effect on depressive symptoms for all grade models except for 6th grade females. For 8th grade females, all positive social environments had a negative effect on depressive symptoms except for positive school environment, and for 12th grade females all positive social environments had a negative effect on depressive symptoms. Finally, although the negative effect of positive family environment on depressive symptoms stayed relatively large across all grades, the range of effects varied from -.58 (p<.001) for 8th grade females to -.47 (p<.001) to 12th grade females.

In the grade stratified models, for females in the 6th grade model, those whose parents had some grade or high school (1.42, p<.001) and those who parents had some college (.67, p<.001) had a higher depressive symptom score than females who parents had a graduate or professional degree. Also, 6th grade female African Americans (1.69, p<.05) and Pacific Islanders (2.41, p<.01) had a higher depressive symptom score than White females. For 8th grade females, those whose parents had some college (.49, p<.01) had a higher depressive symptom score than females whose parents had a graduate degree. Also for 8th grade females, American Indian females (2.23, p<.01) had a higher depressive symptoms score than White females. For 10th grade females, American Indians (-2.04, p<.001) had a lower score than White females, whereas Pacific Islanders (.96, p<.05) had a higher depressive symptom score than White females. Female Pacific Islanders (1.51, p<.01) in 12th grade also had a higher depressive symptom score than White females.

In Figure 5., in terms of positive community environment effects on depressive symptoms (Panel A), the protective effect is stronger for males than females in younger adolescents, however, there is a crossover and the effect becomes stronger for females than for males in later adolescence. In Panel B, the protective effect of positive school environment is stronger for males until about 10th grade where there is a crossover and the protective effect becomes stronger for females. In Panel C, the protective effect of positive family environment is consistent in that it is strongest for females across all the grades with a narrowing between boy and girls around 12th grade. In Panel D, the protective effect of positive friend environment does not differ between males and females over grades. The protective effect of positive friend environment on depressive symptoms is strongest for females over the grades with a narrowing around 10th grade and with what seems to be a similar rate decrease for both boys and girls around 10th to 12th grade, see figures that follow.

Discussion

Using a representative sample of adolescents in Utah obtained from the Utah Prevention Needs Assessment, this analysis explored the effects of positive social environments on adolescent depressive symptoms across gender and over the course of adolescence. In particular, the analyses focused on differences between adolescent males and females and whether those who reported higher levels of positive social environments at the community, school, family, and peer group level also reported lower depressive symptoms. The influence of positive social environments on depressive

symptoms were then assessed for each grade in order to highlight how these relationships vary over the course of adolescence.

In sum, for both males and females, having elevated levels of positive social environments (community, school, family and peer) meant that they had a lower depressive symptom score. This effect was especially strong for females who not only had lower levels of depressive symptoms for each positive social environment, but also had more positive social environmental sources of support over the course of adolescence. For example, 6th grade girls and boys received protective effects from all positive social environments on depressive symptoms, whereas for 12th graders, boys had only protective effects from positive family environments while girls still received protective effects from all environments.

The support that girls receive from positive environments may be stronger and come from more sources than for boys due to developmental differences in identity and coping strategies (Nolen-Hoeksema, 2001). Girls tend to invest more time and effort into relationships than boys, and identity development for girls may be interrelated with relationship development (Rueger, 2010). This means that social resources may play a more significant role over time in the well-being of girls than boys (Copeland, 1995, Frydenberg, 1993). Furthermore, girls tend to use social resources as a coping strategy (Frydenberg, 1993), specifically, they tend to develop friendships that are more emotionally intimate and involve sharing of confidence (Frey, 1996). These kinds of emotional support often reduce the risk of depression because they help to create positive coping skills and a sense of self-worth that help adolescents overcome obstacles related to depression (Hirsch, 1985). In contrast, as adolescent boys develop and experience

different gender related identities, roles, and responsibilities (Hill, 1983), they may begin to adopt stress reduction activities or engage in diversions (Copeland, 1995) like playing sports as coping strategies (Frydenberg, 1993). Boys may engage in these types of activities instead of relying on relationships to deal with disappointments and stressful events that are related to depression.

Positive family environment had the relatively largest protective effect on depressive symptoms for both adolescent boys and girls over the course of adolescence. This finding was evident across all grades suggesting that warm and supportive family relationships are important in reducing the likelihood of adolescent depression (Amato, 2000) throughout adolescence. This finding supports other research which has found that when compared to friends and other social environments, families play an important role in mitigating stressors that may lead to depression. For example, one study found that adolescents used family social support relatively more often than friend social support when coping with stressors (Kobus, 2000). However, research has also found that movement through adolescence means shifting from family to friends as important figures in development (Gentry, 2002). The finding from the current study, that family plays a large enduring role throughout adolescence relative to friends is likely due to the outcome assessed, depressive symptoms, and its relationship to self-esteem. Families provide a kind of enduring aid and support that is important to bolstering self-worth and self-esteem (Paterson, 1994), which then helps in dealing with stressful situations (King, 1993) and avoiding depression (Bond, 2005).

Adolescent grade, i.e., developmental stage, also plays an important part in how positive social environments influence depressive symptom scores across genders.

Analyses revealed that the influence of positive social environments on depressive symptoms varied according to grade and gender. Generally, adolescent girls experienced stronger protective effects of positive social environments over time and garnered support consistently from more sources over time when compared to adolescent boys. For adolescent boys, the size and source of the protective effect of positive social environments on depressive symptoms varied over the course of adolescence. For example, positive community and school environments only had protective effects for younger adolescent boys (6th and 8th grade) and not for older adolescent boys (10th and 12th grade). Furthermore, the protective effects of these positive social environments on depressive symptoms for 6th and 8th grade boys were smaller than for girls in the same grades. These findings suggest that differences in social, behavioral, cognitive, and physical changes between males and females during adolescence, specifically, how they develop differing values regarding relationships as social support (Gilligan, 1982; Rueger, 2010), affect how positive social environments influence adolescent outcomes at different stages of growth (Gentry, 2002; Kobus, 2000; Rueger, 2010), especially when dealing with factors related to depression.

These findings add to the current literature on adolescent depression by highlighting how positive social environments protect against adolescent depressive symptoms differently across gender and over the course of adolescence. Future research should continue to clarify the important role that social support from multiple environments may have on adolescent well-being by examining differences in the development of gender roles and identity and how these mediate or moderate the utilization of social support from multiple sources. The findings of this study are

important because if positive social environments can directly protect against precursors to adolescent depression (Pine, 1999) i.e., depressive symptoms, then they have the potential to reduce the prevalence of adolescent depression overall, especially among adolescent girls.

Limitations

Several limitations in this study are noteworthy. In terms of data, depressive symptoms were self-reported, and thus have the potential for errors in internal validity. However, the PNA honesty score and elimination technique helps eliminate extraneous bias in the data. Furthermore, due to the cross-sectional nature of this study, causal inferences are limited in the findings. Future research should address these questions using a prospective study design in order to investigate change over multiple time points to get a clearer picture of the causal relationship between support from various sources and depression outcomes. A study of this type would allow for a nuanced examination of the possible causal effects of positive social environments on adolescent depression and how changes that occur during adolescence are related to gender differences in adolescent outcomes.

Conclusion

This study showed that positive social environments (i.e., shared relationships) are important to understanding adolescent depressive symptoms over the course of adolescence (i.e., timing), especially across genders. Furthermore, this study highlighted how adolescence is more than just one transitional time period, but rather encompasses

many transitions and turning points and that these may differ between genders. These concepts highlighted how the protective strength and salience of each positive social environment on adolescent depressive symptoms changed according to adolescent developmental stage and gender. Understanding the relationship between positive social environments and depression over the course of adolescence and across genders is an important step towards understanding health over the life course because of the lasting effects that adolescent depression can have on future social and health development (Fergusson, 2005; Pine, 1999), especially in women (Cyranowski, 2000).

This investigation built on previous literature which found that utilization of social support from different social environments varied across genders, with males tending to use more community and school types of environmental support, and females tending to use more friend environmental types of support (Rueger, 2010). It adds to the current literature on social support and depression in adolescence by highlighting how the salience and quantity of supportive positive environments is not only different between genders, but also over the course of adolescence.

Overall, these findings suggest that the protective influence of positive social environments on adolescent depressive symptoms are multicontextual, but also depend on adolescent age and gender. This information can aid policy makers and grant funders in determining which environmental changes should be made to build positive social environments, and at which ages or stages these changes will be most beneficial for males and/or females.

Table 10. Average Depressive Symptoms and Positive Social Environments Score by Sex, Utah PNA 2011.

	Total Sample (n=22254)	
	Male Mean (SE)	**Female Mean (SE)**
Depressive Symptoms [Observed Range 1-16]	7.14* (.03)	7.89* (.03)
Positive Community Environment [Observed Range 3-12]	7.11 (.03)	7.16 (.03)
Positive School Environment [Observed Range 5-20]	14.61* (.02)	14.81* (.02)
Positive Family Environment [Observed Range 3-12]	9.17* (.03)	9.29* (.03)
Positive Peer Environment [Observed Range 5-25]	18.32* (.04)	19.02* (.04)

*Significant difference across sexes, $p<.05$, as assessed by ANOVAs. Data source: Utah PNA 2011.

Table 11. Average Depressive Symptoms and Positive Social Environments Score by Grade and Sex, Utah PNA 2011.

	6th Grade (n=6814)		8th Grade (n=6034)		10th Grade (n=5306)		12th Grade (n=4100)	
	Male Mean (SE)	**Female Mean (SE)**	**Male Mean (SE)**	**Female Mean (SE)**	**Male Mean (SE)**	**Female Mean (SE)**	**Male Mean (SE)**	**Female Mean (SE)**
Depressive Symptoms†‡ [Observed Range 1-16]	7.13* (.05)	7.42* (.05)	6.98* (.05)	8.15* (.06)	7.33* (.06)	8.18* (.06)	7.14* (.06)	7.83* (.07)
Positive Community Environment†‡ [Observed Range 3-12]	7.46* (.06)	7.64* (.06)	7.03 (.06)	7.12 (.06)	7.05* (.06)	6.89* (.06)	7.07 (.07)	6.97 (.08)
Positive School Environment†‡ [Observed Range 5-20]	14.70* (.04)	15.07* (.04)	14.32* (.04)	14.53* (.04)	14.69* (.04)	14.81* (.03)	14.76* (.04)	14.86* (.04)
Positive Family Environment†‡ [Observed Range 3-12]	9.71* (.05)	10.03* (.04)	9.15 (.06)	9.14 (.06)	8.92 (.05)	8.99 (.05)	8.91 (.06)	8.95 (.07)
Positive Peer Environment†‡ [Observed Range 5-25]	19.17* (.06)	20.17* (.06)	17.96* (.08)	18.72* (.08)	18.12* (.08)	18.77* (.08)	17.94* (.10)	18.33* (.10)

*Significant difference between sexes within grade, †Significant difference across grades for male. ‡Significant difference across grades for females, $p < .05$, as assessed by ANOVAs. Data source: Utah PNA 2011.

Table 12. Male Linear Regression Coefficients and Standard Errors of Positive Social Contexts on Depressive Symptoms.

	Males					
	Bivariate	***Full Model (n=8549)***	***6th Grade (n=2216)***	***8th Grade (n=2286)***	***10th Grade (n=2151)***	***12th Grade (n=1896)***
Positive Community Environment	-.33 (.018)***	-.05 (.017)**	-.08 (.035)*	-.07 (.034)*	-.05 (.044)	-.02 (.041)
Positive School Environment	-.28 (.015)***	-.07 (.019)***	-.10 (.041)*	-.13 (.036)***	-.04 (.051)	-.04 (.045)
Positive Family Environment	-.59 (.021)***	-.47 (.021)***	-.45 (.049)***	-.47 (.048)***	-.46 (.046)***	-.46 (.052)***
Positive Peer Environment	-.18 (.007)***	-.07 (.009)***	-.12 (.023)***	-.08 (.019)***	-.11 (.022)***	-.03 (.020)
Grade						
6th		.32 (.010)***	n/a	n/a	n/a	n/a
8th		-.12 (.093)	n/a	n/a	n/a	n/a
10th		.20 (.010)*	n/a	n/a	n/a	n/a
12th†		-	n/a	n/a	n/a	n/a
Parental Education						
Some Grade school /Some High School		.37 (.192)	.17 (.400)	.83 (.378)*	.60 (.450)	-.02 (.421)
Some College		.12 (.075)	.28 (.183)	.24 (.154)	.15 (.191)	-.14 (.18)
Graduate or Professional†		-	-	-	-	-
Race						
American Indian		.28 (.363)	1.25 (.864)	.54 (.490)	-.11 (.624)	-.23 (.729)
Asian		.36 (.228)	.77 (.692)	-.17 (.405)	.24 (.522)	.83 (.601)
African American		.42 (.272)	.50 (.562)	1.01 (.600)	.69 (.531)	-.30 (.773)
Hispanic		.18 (.140)	.67 (.340)	-.12 (.234)	-.69 (.309)*	.86 (.601)*
Pacific Islander		.21 (.255)	.24 (.606)	.09 (.496)	-.34 (.510)	1.03 (.670)
White†		-	-	-	-	-
Other		.27 (.126)*	.14 (.243)	.20 (.288)	.19 (.299)	.57 (.310)
Adjusted R^2		.20	.24	.27	.20	.15

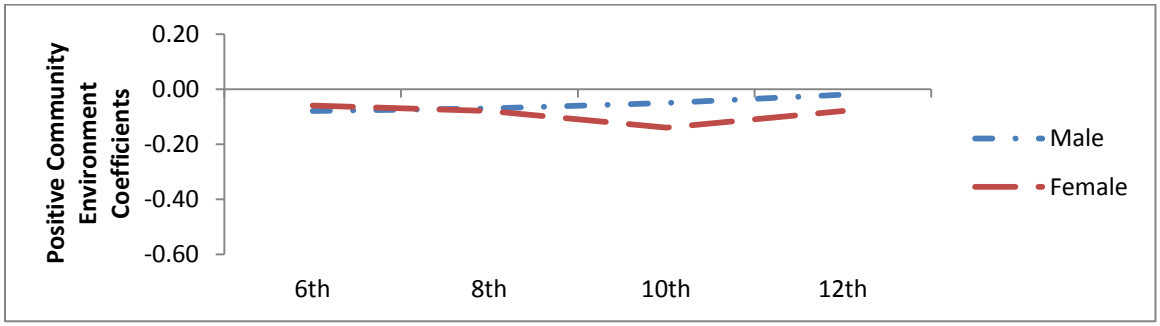
Notes: * $p < .05$, ** $p < .01$, ***$p < .001$. † is the reference variable. n/a= not applicable due to stratification. Data source: Utah PNA 2011.

Table 13. Female Linear Regression Coefficients and Standard Errors of Positive Social Contexts on Depressive Symptoms.

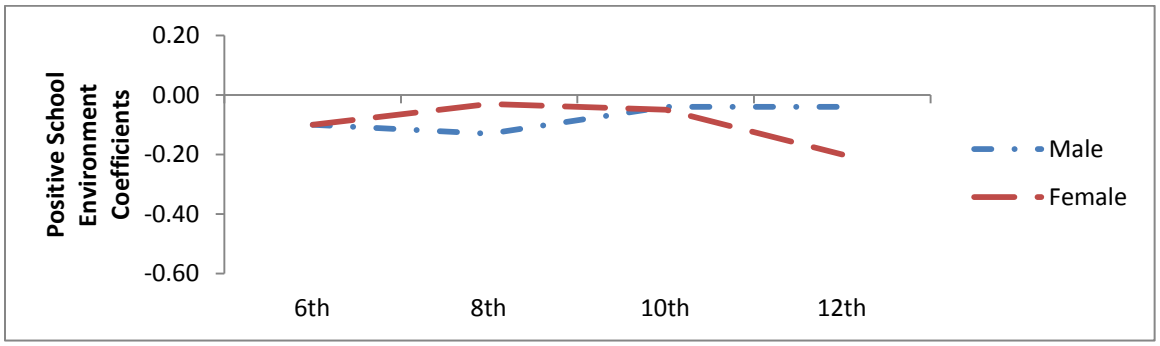
Females						
	Bivariate	***Full Model (n=9285)***	***6th Grade (n=2288)***	***8th Grade (n=2578***	***10th Grade (n=2526)***	***12th Grade (n=1893)***
Positive Community Environment	-.45 (.017)***	-.09 (.019)***	-.06 (.035)	-.08 (.036)*	-.14 (.038)***	-.08 (.040)*
Positive School Environment	-.39 (.014)***	-.09 (.021)***	-.10 (.036)**	-.03 (.039)	-.05 (.040)**	-.20 (.046)***
Positive Family Environment	-.74 (.0187)***	-.54 (.024)***	-.52 (.050)***	-.58 (.041)***	-.54 (.043)***	-.47 (.049)***
Positive Peer Environment	-.28 (.007)***	-.12 (.011)***	-.16 (.028)***	-.17 (.021)***	-.13 (.020)***	-.05 (.021)*
Grade						
6th		.41 (.117)***	n/a	n/a	n/a	n/a
8th		.43 (.115)***	n/a	n/a	n/a	n/a
10th		.54 (.114)***	n/a	n/a	n/a	n/a
12th†		-	n/a	n/a	n/a	n/a
Parental Education						
Some Grade school /Some High School		.59 (.188)**	1.42 (.358)***	.34 (.380)	.04 (.311)	.79 (.415)
Some College		.32 (.088)***	.67 (.181)***	.49 (.163)**	-.03 (.164)	.25 (.185)
Graduate or Professional†						
Race						
American Indian		.20 (.377)	.46 (.469)	2.23 (.589)**	-2.04 (.553)***	.45 (.899)
Asian		.67 (.300)*	.42 (.794)	-.009 (.450)	1.19 (.531)*	.87 (.557)
African American		.71 (.375)	1.69 (.590)*	.96 (.676)	.21 (.546)	-.65 (1.09)
Hispanic		.13 (.152)	.42 (.286)	.23 (.279)	-.12 (.320)	.02 (.332)
Pacific Islander		1.18 (.313)***	2.41 (.772)**	.63 (.649)	.96 (.484)*	1.51 (.570)**
White†		-	-	-	-	
Other		.25 (.144)	.39 (.261)	.56 (.308)	.09 (.281)	-.06 (.283)
Adjusted R^2		.31	.29	.38	.31	.25

Notes: * $p<.05$, ** $p<.01$, ***$p<.001$. † is the reference variable. n/a= not applicable due to stratification. Data source: Utah PNA 2011.

Panel A. Positive Community Environment on Adolescent Depression by Grade and Sex.



Panel B. Positive School Environment on Adolescent Depression by Grade and Sex.



Panel C. Positive Family Environment on Adolescent Depression by Grade and Sex.

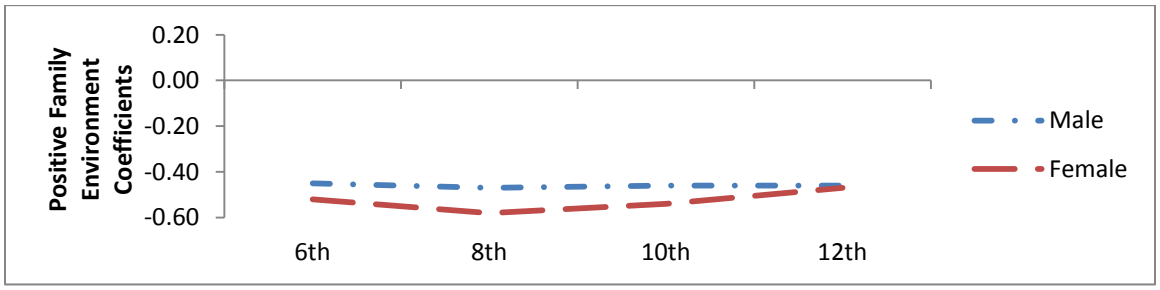


Figure 5. Panels A, B, C, and D, Coefficients of Positive Social Environment on Adolescent Depressive Symptoms by Grade and Sex.

Panel D. Positive Peer Environment on Adolescent Depression by Grade and Sex.

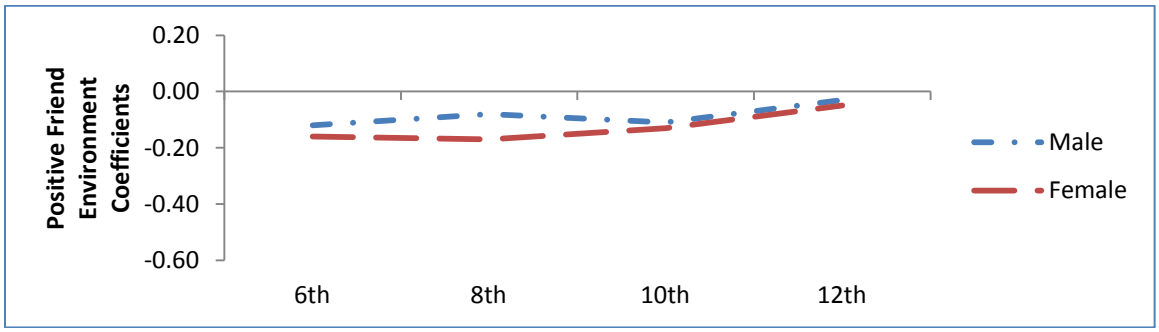


Figure 5. Continued.

CHAPTER 5

CONCLUSIONS, FUTURE RESEARCH, AND POLICY IMPLICATIONS

This study has contributed to the understanding of how positive social environments influence adolescent outcomes by using a refined analysis that highlights differences by outcome (behavior and depressive symptoms), adolescent stage (early, middle, and late), and sex. Specifically, it assessed how positive social environments influence prosocial and risky behaviors (which are also related to adolescent depressive symptoms) and how they protect against depressive symptoms, possibly through providing various kinds of social support (Blum, 2002), and how these relationships change according the age of the adolescent and sex.

Understanding how social environments influence depression, specifically positive social environments that provide protective factors like social support, is important because adolescent depression is the most widely reported disorder to occur during adolescence (Mulye, 2009) and can have lasting implications on later life health (Galambos, 2006). As well, depression also greatly impacts adolescents, in that depressed adolescents tend to be more likely to exhibit academic problems, drop-out of school, and attempt suicide (Brooks, 2002; Eggert, 2002). These findings highlight

adolescence as a critical period for identification, prevention, and intervention of risky behaviors and depressive symptoms.

Review of Study Results

This study was conducted in order to understand how positive social environments are related to important behaviors and depressive symptoms over the course of adolescence. Specifically, how several levels of positive social environments (community, school, family, friend) act as protective factors against depressive symptoms and risky behaviors, and how these same positive social environments are related to prosocial behaviors (which have protective effects against depressive symptoms; Bond, 2005). Furthermore, this study was also conducted in order to understand how these relationships varied over the course of adolescence. This research was guided by mounting studies that show protecting adolescents' from poor outcomes involves more than just eliminating risk factors but by also increasing and strengthening protective factors (Blum, 2002). It was also guided by studies that highlight potential differences in how protective factors may influence outcomes by age and gender (Ruegar, 2010; Smetana, 2006).

As guided by the first aim to investigate the role of positive social environments on adolescent behavior, this study found that most positive social environments (neighbor, school, family, and friend), especially positive friend environment, protected against risky behaviors (30 day cigarette and alcohol use) and promoted prosocial behaviors (Chapter 2). Positive friend environment had the strongest influence relative to other social environments and this relationship persisted across grades. Guided by the

second aim to examine the role of positive social environments on behavior over the course of adolescence, it was shown that the influence of positive social environments on the behavior outcomes varied over the course of adolescence. For example, positive family environment was a protective factor against alcohol use for all grades except for 12th grade and had the strongest protective effect for 6th graders. Finally, in Chapter 2, stepwise regression revealed that many of the positive social environments share variance in the outcomes measured suggesting that positive social environments are embedded within a larger social structure that affects how social environments are influenced by other social environments.

In Chapter 3, as guided by the first aim to investigate the role of each positive social environment on depressive symptoms, positive social environments were also found to protect against depressive symptoms, in that those with higher levels of positive social environments had lower depressive symptoms scores. The influence of positive family environments on depressive symptoms was especially strong relative to other positive social environments. Furthermore, prosocial and risky behaviors did not mediate the relationship between positive social environments and depressive symptoms; however, they did have independent effects with prosocial behavior having protective effects and risky behaviors being associated with an increased score of depressive symptoms. Also, as guided by the second aim to examine the role of positive social environments on depressive symptoms over the course of adolescence, these relationships were also found to vary across grades. For example, positive community environments had protective effects on depressive symptoms for all grades except for 12th graders.

Finally, in Chapter 4, as guided by the aims of this study to investigate the role of positive social environments on adolescent depressive symptoms between adolescent males and females over the course of adolescence, this study found that the influence of positive social environments on depressive symptoms not only varied over the course of adolescence but also by sex. For both males and females, having elevated levels of positive social environments (community, school, family and peer) meant that adolescents had less depressive symptoms. This effect was especially strong for females who not only had lower levels of depressive symptoms for each positive social environment, but also had more positive social environmental sources of support over the course of adolescence (i.e., across all grades). For example, 6th grade girls and boys had protective effects from all positive social environments on depressive symptoms, whereas for 12th graders, boys only had protective effects from positive family environments while girls still received protective effects from all environments with each protective effect being stronger for girls than for boys.

In conclusion, results of this study demonstrated a protective effect of positive social environments on poor outcomes meaning that adolescents who had higher positive social environment scores were less likely to smoke cigarettes or drink alcohol and had lower depressive symptom scores. This study has also demonstrated a positive association between positive social environments and positive outcomes meaning that those with higher positive social environment scores were more likely to report engaging in prosocial behaviors (Carlo, 1999). Although prosocial and risky behaviors did not act as behavioral mechanisms between positive social environments and depressive symptoms, they still had independent effects on depressive symptoms meaning that

adolescents who engaged in prosocial behaviors had lower depressive symptom scores than those who do not, and those who engaged in cigarette and alcohol use had higher depressive symptom scores than those who did not.

Theoretically, these findings add to the positive youth development framework by highlighting positive social environments as important developmental assets over the course of adolescence. Specifically, by highlighting positive social environments as important developmental assets that provide nutrients for positive youth development over the course of adolescence, we see that the effects of developmental assets are variable depending on age and gender. Although Lerner (2009) mentions the possibility of this kind of variability, there are no detailed findings provided. Essentially, the details are provided in this study which highlights the unique developmental and gender related differences in the protective effects of positive social environments on adolescent behaviors and depressive symptoms.

The influence of any one positive social environment on behaviors differed according to grade, and protective effects for depressive symptoms differed according to grade and sex. For example, the protective effect of each positive social environment (community, school, family, and friend) on depressive symptoms was typically stronger for females but depending on adolescent stage could be more protective for males. For both males and females, the protective influence of any one positive social environment on depressive symptoms changed over the course of adolescence, this was probably related to developmental and gender related changes that make one type of environment more or less important at any given time during development, and different for girls when compared to boys (Gentry, 2002; Cooper 1985).

Another important contribution includes findings that show how multiple levels of positive social environments share variance in the outcomes assessed, and how the effect of each positive social environment directly and concurrently influences behaviors (i.e., prosocial and risky behaviors) over the course of adolescence. Furthermore, this study also contributes to the literature on adolescent depression by highlighting these same relationships only with depressive symptoms and how these relationships differ across sexes. Finally, this study contributes to the literature on adolescent depression by testing possible behavioral mechanisms, i.e., prosocial and risky behaviors, to depression precursors (Pine, 1999), which proved not to mediate the relationship between positive social environments and depressive symptoms. Overall, this study contributes to the literature on adolescent health by showing that relationships between positive social environments and adolescent health outcomes should consider how developmental differences related to adolescent stage and gender may influence outcomes.

The large sample size was a key advantage of this study because it allowed for a refined analysis of outcomes by grade and sex, which then conceptually contributes to the literature on adolescent health by highlighting that even within adolescence there are unique stages and important turning points/transitions related to gender that affect behavior and health outcomes. These important stages or transitions/turning points mean that there will be differences in how risk and protective factors affect adolescent outcomes. Another key advantage of this study was the ability to concurrently examine several levels of positive social environments on developmental outcomes. These findings aid in the understanding of how different social environments like community, school, family, and friend all share influence on adolescent health outcomes.

Prosocial and risky behaviors were not incorporated into Chapter 4 (sex and grade analysis of depressive symptoms) of this study because of their inability to act as behavioral mechanisms between positive social environments and adolescent depressive symptoms in Chapter 3 (grade analysis of depressive symptoms). This suggests that there are other potential behavioral mechanisms, possibly related to psychological constructs like self-esteem (Trzesniewski, 2006) that are important to understanding the link between positive social environments and adolescent depressive symptoms, future research should test other possible developmental mechanisms.

Overall, positive social environments play an important role in prosocial and risky behaviors and depressive symptoms, however, the strength of each positive social environment on these outcomes varied greatly. For example, for depressive symptoms, positive family environments had a much larger effect on depressive symptoms for both males and females across all grades when compared to positive community, school, and even friends. Also, for both prosocial and risky behaviors, positive friend environments had stronger effects across all grades when compared to other positive social environments. These differences may be related to the idea that families, rather than friends, provide needed support when dealing with stress and anxiety related to poor mental health outcomes (Licitra-Kleckler, 1992), whereas friends, more so than family, provide the arena for behavior development in adolescence (Ary, 1999).

The results of this study highlight the importance of positive social environments on behavior and depressive symptoms and how these relationships differ across sex and over the course of adolescence, but specifically, this study highlights the importance of positive family and friend environments on important behavior and health related

outcomes. Family and friend environments that provide confirmation of social identity, instrumental aid, and various forms of support (emotional, informational and appraisal) (Cassel, 1974; Cobb, 1976; Cohen and Wills, 1985; House, 1981) will help keep adolescents healthy and set them on a trajectory for healthy lives.

Study Limitations and Recommendations

To the best of the researcher's knowledge, this study was the first of its kind to examine the protective effects of several positive social environments on adolescent behaviors and depressive symptoms using a highly refined analysis of both grade and sex. Furthermore, it tested two potential behavioral mechanisms of positive social environments on depressive symptoms. These contributions represent strengths of the study; however, it is not without notable limitations that will hopefully serve to guide future research on social environments and adolescent health.

In terms of data, all behaviors and depressive symptoms were self-reported, and thus have the potential for errors in internal validity. However, the PNA honesty score and elimination technique helps eliminate some extraneous bias in the data. Furthermore, the depressive symptom scale has not been validated as a scale that can predict the possibility of future depression.

Due to the cross-sectional nature of this study, causal conclusions cannot be inferred from this study. Future research should address similar questions related to this study using a prospective design which would allow for an investigation of change over multiple time points and give a clearer picture of causal relationships. A study of this type would allow for a nuanced examination of the possible causal effects of positive social

environments on adolescent behaviors and depression and how developmental changes that occur during adolescence may be directly related to these outcomes.

Although this study utilized an extremely large representative dataset of Utah adolescents that allowed for a refined grade and sex analysis, this study may be limited to Utah adolescents and the results should be interpreted with care when generalizing to adolescents in general. This is due to the unique culture in Utah that places a high value on marriage, religion, and families (Census snapshot: Utah's culture makes it stand out) and has the potential to confound the relationship between the independent variables and the outcomes measured.

This was one of the first studies to examine the protective effects of several concurrent positive social environments on adolescent depressive symptoms by both grade and sex; however, it did not address questions related to how positive social environments might interact and directly influence each other. For example, having positive communities may mean that friend groups and even family environments might be more positive in nature. Lenzi (2011) found that perceived opportunities and social resources in a neighborhood were related to higher levels of adolescent prosocial behavior through perceived social support from friends. In terms of policy prescriptions, knowledge of how positive social environments' affect one another would be beneficial in promoting all levels of positive social environments.

This study also did not address questions related to how positive social domains might complement or add to each other. For example, in a study conducted by Bond (2005), he found that having 7-10 protective factors reduced the risk of depressive symptoms for both males and females and having 4-6 protective factors reduced the risk

of depressive symptoms for substance users. These findings suggest that future research would benefit from examining the potential additive effects of positive social environments on health and behavior outcomes. For example, examining the effects of having one versus multiple positive social environments would highlight how multiple positive social environments might provide similarly strong effects as having only one positive environment that is especially strong.

Finally, this study only assessed a few of the many behavior and health outcomes that occur during adolescence. Future research should consider how positive social environments affect other risky behaviors like drug use and unsafe sexual activities or how they promote positive behaviors like helping others. Also, future studies could examine how these and other possible behaviors act as mechanisms of positive social environments and health outcomes like obesity and anxiety. These types of studies would highlight positive social environments as important protective factors that not only reduce the risk of poor developmental outcomes but also promote positive competencies during adolescence, thus changing the focus of adolescent health research from identifying risk factors to focusing on factors that promote positive behaviors and health outcomes (Adolescent Health Services, 2009).

Applications and Policy Implications

Policies and programs are needed that will not only address risk factors related to adolescent development but will promote opportunities to build positive environments that foster trust and support and promote positive developmental outcomes. Despite the limitations of the present study, its findings, when taken together with existing research,

have several unique applications. Community applications of this research would include adopting social policies and programs that promote positive social environments. In general, public awareness campaigns could educate school administrators, teachers, and parents on the importance of strong, open, and supportive relationships with adolescents and how to build these types of relationships. One way to accomplish these types of relationships is for adults to understand the changes and stresses that occur during adolescence and how they can best provide aid and support related to these specific changes. One resource that is available to help accomplish this task is available at http://www.apa.org/pi/families/resources/develop.pdf. Also, the following resource provides scientific evidence on the importance of school connectedness and information on how to implement evidence based interventions that build school connectedness http://www.cdc.gov/healthyyouth/adolescenthealth/pdf/connectedness.pdf. Federal or state dollars allocated to schools and communities could require such entities to create plans or work towards objectives that foster positive social environments using the aforementioned resources.

Overall this study has shown that adolescence is a time of great change and transition. Positive social environments play an important role in positive outcomes as important developmental assets (Lerner, 2009). Positive social environments may directly affect health outcomes through providing various forms of support that help adolescents deal with stress and adversity related to poor outcomes, or they may work indirectly through influencing behaviors or psychological developments like self-esteem. Overall, the protective effect of positive social environments on adolescent outcomes is nuanced

and deserves special attention to differences across gender and developmental stages within adolescence

REFERENCES

Adolescent Depression. (2013). Centers of Disease Control (CDC). *America's Children: Key National Indicators of Well-Being.* Retrieved August 28, 2013, from (http://www.childstats.gov/americaschildren/health4.asp).

Adolescent Health Services. (2009). *The National Research Council Institute of Medicine's Adolescent Health Services: Highlights and Considerations for State Health Policymakers.* Retrieved on August 29, 2013 from Institute of Medicine's http://nashp.org/sites/default/files/AdolHealth.pdf?q=files/AdolHealth.pdf.

Alessandri, G., Caprara, G., Eisenberg, N., & Steca, P. (2009). Reciprocal relations among self-efficacy beliefs and prosociality across time. *Journal Of Personality*, *77*(4), 1229-1259.

Alexander, C., Piazza, M., Mekos, D., & Valente, T. (2001). Peers, schools, and adolescent cigarette smoking. *Journal Of Adolescent Health*, *29*(1), 22-30.

Amato, P. R. (2000). The consequences of divorce for adults and children. *Journal Of Marriage And Family*, *62*(4), 1269-1287.

Arnett, J. (1999). Adolescent storm and stress, reconsidered. *American Psychologist*, *54*(5), 317-326.

Arthur, M. W., Hawkins, J., Pollard, J. A., Catalano, R. F., & Baglioni, A. r. (2002). Measuring risk and protective factors for substance use, delinquency, and other adolescent problem behaviors: The Communities That Care Youth Survey. *Evaluation Review*, *26*(6), 575-601.

Ary, D. V., & Duncan, T. E. (1999). Development of adolescent problem behavior. *Journal Of Abnormal Child Psychology*, *27*(2), 141.

Aseltine, R. H., Jr., Gore, S., & Colten, M. E. (1994). Depression and the social developmental context of adolescence. *Journal of Personality and Social Psychology*, *67*, 252-263.

Bandura, A. A., (1999). Self-efficacy pathways to childhood depression. *Personality Processes and Individual Differences, 76*(2), 258-269.

Bandura, A. A., Caprara, G. V., Barbaranelli, C. C., Gerbino, M. M., Pastorelli, C. C., Gano-Overway, L. A., & Guivernau, M. R. (2009). Affective self-regulatory efficacy scale. *Developmental Psychology, 45*(2), 329-340.

Bauman, K.E., & Fisher, L.A. (1986). On the measurement of friend behavior in research on friend influence and selection: Findings from longitudinal studies of adolescent smoking and drinking. *Journal of Youth and Adolescence, 15*, 345–353.

Bengtson, V. L., & Allen, K. R. (1993). The life course perspective applied to families over time. In P. G. Boss, W. J. Doherty, R. LaRossa, W. R. Schumm, S. K. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 469-504). New York, NY US: Plenum Press.

Benson, P.L., & Scales, P.C. (2006). Positive youth development: Theory, research, and applications. In R.M. Lerner (Vol. Ed.), *Handbook of child psychology: Vol. 1. Theoretical models of human development* (6th ed., pp. 894-941). Hoboken, NJ: Wiley.

Berndt, T. J. (1982). The feature and effects of friendship in early adolescence. *Child Development*, *53*(6), 1447.

Berndt, T.J., & Keefe, K. (1995). Friends' influence on adolescents' adjustment to school. *Child Development, 66*, 1312-1329.

Birmaher, B., Ryan, N. D., Williamson, D. E., & Brent, D. A. (1996). Childhood and adolescent depression: A review of the past 10 years, Part I. *Journal Of The American Academy Of Child & Adolescent Psychiatry*, *35*(11), 1427-1439.

Bishop, J. A., & Inderbitzen, H. M. (1995). Peer acceptance and friendship: An investigation of their relation to self-esteem. *The Journal Of Early Adolescence*, *15*(4), 476-489.

Bliese, P. D., & Britt, T. W. (2001). Social support, group consensus and stressor–strain relationships: Social context matters. *Journal Of Organizational Behavior*, *22*(4), 425-436.

Blum, R., McNeely, C., & Nonnemaker, J. (2002). Vulnerability, risk, and protection. *Journal Of Adolescent Health*, *31*(1), 28-39.

Bolognini, M., & And, O. (1996). Self-esteem and mental health in early adolescence: Development and gender differences. *Journal Of Adolescence*, *19*(3), 233-45.

Bond, L., Toumbourou, J. W., Thomas, L., Catalano, R. F., & Patton, G. (2005). Individual, family, school, and community risk and protective factors for depressive symptoms in adolescents: A comparison of risk profiles for substance use and depressive symptoms. *Prevention Science*, *6*(2).

Brage, D., & Meredith, W. (1993). Correlates of loneliness among Midwestern adolescents. *Adolescence*, *28*(111), 685.

Brief, A. P., & Motowidlo, S. J. (1986). Prosocial organizational behaviors. *Academy Of Management Review, 11*(4), 710-725.

Brière, F., Pascal, S., Dupéré, V., & Janosz, M. (2013). School environment and adolescent depressive symptoms: A multilevel longitudinal study. *Pediatrics, 131*(3), e702-e708.

Brook, D. W., Zhang, C., Brook, J. S., & Finch, S. J. (2010). Trajectories of cigarette smoking from adolescence to young adulthood as predictors of obesity in the mid-30s. *Nicotine & Tobacco Research*, *12*(3), 263-270.

Brooks, T.L., Harris, S.K., Thrall, J.S., & Woods, E.R. (2002). Associaton of adolescent risk behaviors with mental health symptoms in high school students. *Journal of Health*, *31*, 240-246.

Brooks-Gunn, J., Browning, C. R., Burrington, L. A., & Leventhal, T., (2008). Neighborhood structural inequality, collective efficacy, and sexual risk behavior among urban youth. *Journal Of Health And Social Behavior*, *49*(3), 269-285.

Bruckner, Mayer. (2005). De-standardization of the life course: What it might mean? And if it means anything, whether it actually took place? *Advances in Life Course Research, 9*, 27–53.

Buchanan, R., & Bowen, G. (2008). In the context of adult support: The influence of peer support on the psychological well-being of middle-school students. *Child & Adolescent Social Work Journal*, *25*(5), 397-407.

Burt, C., Cohen, L., & Bjorck, J. (1988). Perceived family environment as a moderator of young adolescents' life stress adjustment. *American Journal Of Community Psychology*, *16*(1), 101-122.

Calvert, W. (1997). Protective factors within the family, and their role in fostering resiliency in African American adolescents. *Journal Of Cultural Diversity*, *4*(4), 110-117.

Cantillon, D. (2006). Community social organization, parents, and peers as mediators of perceived neighborhood block characteristics on delinquent and prosocial activities. *American Journal Of Community Psychology*, *37*(1/2), 111-127.

Caprara, G., & Steca, P. (2005). Affective and social self-regulatory efficacy beliefs as determinants of positive thinking and happiness. *European Psychologist*, *10*(4), 275-286.

Carlo, G., Crockett, L. J., Wilkinson, J. L., & Beal, S. J. (2011). The longitudinal relationships between rural adolescents' prosocial behaviors and young adult substance Use. *Journal Of Youth And Adolescence*, *40*(9), 1192-1202.

Carlo, G., Fabes, R. A., Laible, D., & Kupanoff, K. (1999). Early adolescence and prosocial/moral behavior II: The role of social and contextual influences. *The Journal Of Early Adolescence*, *19*(2), 133-147.

Carlo, G., & Randall, B. A. (2002). The Development of a measure of prosocial behaviors for late adolescents. *Journal Of Youth And Adolescence*, *31*(1), 31-44.

Carlson, C., Uppal, S., & Prosser, E. C. (2000). Ethnic differences in processes contributing to the self-esteem of early adolescent girls. *Journal of Early Adolescence*, *20*, 44-68.

Cassel, J. C. (1976). The contribution of the social environment to host resistance. *American Journal of Epidemiology*, *104*, 107-123.

Centers for Disease Control (CDC). (2013). *Smoking and Tobacco Use*. Retrieved on August 29, 2013 from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/.

Child Development. 2012. Centers of Disease Control (CDC). Retrieved August 28, 2013 from http://www.cdc.gov/ncbddd/childdevelopment/positiveparenting/adolescence.html.

Chen, X. (1997). Students' peer groups in high school: The pattern and relationships to educational outcomes. *Statistics in brief*. Washington, DC: National Center for Education Statistics, Department of Education. Retrieved August 28, 2013 from http://nces.ed.gov/pubs97/97055.pdf.

Choi, W., Patten, C., Gillin, J., Kaplan, R., & Pierce, J. (1997). Cigarette smoking predicts development of depressive symptoms among U.S. adolescents. *Annals Of Behavioral Medicine: A Publication Of The Society Of Behavioral Medicine*, *19*(1), 42-50.

Clausen, J. A. (1991). Adolescent competence and the shaping of the life course. *American Journal of Sociology, 96*, 805–842.

Cobb, S. (1976). Social support as a moderator of life stress. *Psychomatic Medicine, 38,* 300-314.

Cohen, S., & Wills, T. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 58*(2), 310-357.

Colarossi, L. G., & Eccles, J. S. (2003). Differential effects of support providers on adolescents' mental health. *Social Work Research*, *27*, 19–30.

Collins, W. A., & Russell, G. (1991). Mother-child and father-child relationships in middle childhood and adolescence: A developmental analysis. *Developmental Review, 11*, 99-136.

Collins, W.A., Maccoby, E., Steinberg, L., Hetherington, E.M., & Bornstein, M. (2000). Contemporary research on parenting: The case for nature and nurture. *American. Psychology, 55*, 218–32.

Compas, B. E., Oppedisano, G., Connor, J. K., Gerhardt, C. A., Hinden, B. R., Achenbach, T. M., & Hammen, C. (1997). Gender differences in depressive symptoms in adolescence: Comparison of national samples of clinically referred and nonreferred youths. *Journal Of Consulting And Clinical Psychology*, *65*(4), 617-626.

Cook, T. D., Herman, M. R., Phillips, M. M., & Settersten Jr., R. A. (2002). Some ways in which neighborhoods, nuclear families, friendship groups, and schools jointly affect changes in early adolescent development. *Child Development, 73*(4), 1283-1309.

Cooper, C. R., & Ayers-Lopez, S. (1985). Family and peer systems in early adolescence: New models of the role of relationships in development. *The Journal Of Early Adolescence*, *5*(1), 9-21.

Copeland, E. P., & Hess, R. S. (1995). Differences in young adolescents' coping strategies based on gender and ethnicity. *Journal Of Early Adolescence*, *15*(2), 203-19.

Costello, D. M., Swendsen, J., Rose, J. S., & Dierker, L. C. (2008). Risk and protective factors associated with trajectories of depressed mood from adolescence to early adulthood. *Journal Of Consulting And Clinical Psychology*, *76*(2), 173-183.

Croll, J., Neumark-Sztainer, D., & Story, M., et al. (2002). Prevalence and risk and protective factors related to disordered eating behaviors among adolescents: Relationship to gender and ethnicity. *J Adolesc Health*, *S*:166–75.

Crosnoe, R., Erickson, K., & Dornbusch, S. M. (2002). Protective functions of family relationships and school factors on the deviant behavior of adolescent boys and girls: Reducing the impact of risky friendships. *Youth & Society*, *33*(4), 515.

Cyranowski, J. M., Frank, E., Young, E., & Shear, M. (2003). Adolescent onset of the gender difference in lifetime rates of major depression: A theoretical model. In M. E. Hertzig, E. A. Farber (Eds.) , *Annual progress in child psychiatry and child development: 2000–2001* (pp. 383-398). New York, NY US: Brunner-Routledge.

Dekker, M. C. (2007). Developmental trajectories of depressive symptoms from early childhood to late adolescence: Gender differences and adult outcome. *Journal Of Child Psychology & Psychiatry*, *48*(7), 657-666.

Deykin, E.Y., Levy, J.C., & Wells, V. (1987). Adolescent depression, alcohol and drug abuse. *American Journal of Public Health*, *77,* 178-182.

Dumont, M., & Provost, M.A. (1999). Resilience in adolescents, protective role of social support, coping strategies, self-esteem, and social activities on experience of stress and depression. *Journal of Youth and Adolescence*, *28*(3), 343-363.

Eberly, M. B., & Montemayor, R. (1999). Adolescent affection and helpfulness toward parents: A 2-year follow up. *Journal of Early Adolescence*, *19*, 226-248.

Eggert, L., Thompson, E., Randell, B., & Pike, K.(2002). Preliminary effects of brief school-based prevention approaches for reducing youth suicide -- risk behaviors, depression, and drug involvement. *Journal Of Child & Adolescent Psychiatric Nursing*, *15*(2), 48-64.

Eisenberg, N., Cameron, E., Tryon, K., & Dodez, R. (1981). Socialization of prosocial behavior in the preschool classroom. *Dev. Psychol*., *71*, 773–782.

Eisenberg, N., Carlo, G., Murphy, B., & Van Court, P. (1995). Prosocial development in late adolescence: A longitudinal study. *Child Development*, *66*, 1179-1197.

Eisenberg, N., & Fabes, R. A. (1991). Prosocial behavior and empathy: A multimethod developmental perspective. In M. S. Clark (Ed.), *Prosocial behavior* (pp. 34-61). Newbury Park, CA: Sage.

Eisenberg, N., & Fabes, R. A. (1998). Prosocial development. In Damon W. (Series ed.) and Eisenberg, N. (Vol. ed.), *Handbook of Child Psychology*, *Vol. 3: Social, Emotional, and Personality Development (5th ed.)* (pp. 701-778). New York: John Wiley & Sons, Inc.

Eklund, J., Loeb, C., Hansen, E. M., & Andersson-Wallin, A. C. (2012). Who cares about others?: Empathic self-efficacy as an antecedent to prosocial behavior. *Current Research in Social Psychology*, *20*(3), 31-41.

Elder, G. (2004). The emergence and development of life course theory. *Handbook of the Life Course*. (pp. 3). United States: Springer Science + Business Media.

Ensminger, M. E., & Slusarcick, A. L. (1992). Paths to high school graduation or dropout: Al Study of a first-grade cohort. *Sociology Of Education*, *65*(2), 95-113.

Essau, C., & Petermann, F. (1997). Developmental psychopathology. *Epidemiology, diagnostics and treatment*. Amsterdam Netherlands: Harwood Academic Publishers.

Fabes, R. A., Carlo, G., Kupanoff, K., & Laible, D. (1999). Early adolescence and prosocial/moral behavior I: The role of individual processes. *The Journal Of Early Adolescence*, *19*(1), 5-16.

Feldman, A., & Matjasko, J. (2005). The role of school-based extracurricular activities in adolescent development: A comprehensive review and future directions. *Review of Educational Research*, *75*(2), 159-210.

Fergusson, D., Horwood, L., Ridder, E., & Beautrais, A. (2005). Subthreshold depression in adolescence and mental health outcomes in adulthood. *Archives Of General Psychiatry*, *62*(1), 66-72.

Fleming, J., & Offord, D. (1990). Epidemiology of childhood depressive disorders: A critical review. *Journal Of The American Academy Of Child And Adolescent Psychiatry*, *29*(4), 571-580.

Frey, C. U., & Ro¨thlisberger, C. (1996). Social support in healthy adolescents. *Journal of Youth and Adolescence*, *25*, 17–31.

Frydenberg, E., & Lewis, R. (1993). Boys play sport and girls turn to others: Age, gender and ethnicity as determinants of coping. *Journal Of Adolescence*, *16*(3), 253.

Galambos, N. L., Barker, E. T., & Krahn, H. J. (2006). Depression, self-esteem, and anger in emerging adulthood: Seven-year trajectories. *Developmental Psychology*, *42*(2), 350-365.

Garrison, C., Jackson, K., Marsteller, F., McKeown, R., & Addy, C. (1990). A longitudinal study of depressive symptomatology in young adolescents. *Journal Of The American Academy Of Child And Adolescent Psychiatry*, *29*(4), 581-585.

Gauze, C., Bukowski, W., Aquan-Assee, J., & Sippola, L. (1996). Interactions between family environment and friendship and associations with self-perceived well-being during early adolescence. *Child Development*, *67*(5), 2201-2216.

Gentry, H. (2002). *Developing Adolescences CDC.* Heal Health Resources and Services Administration, U.S. Department of Health and Human Services. Retrieved August 28, 2013 from http://www.apa.org/pi/families/resources/develop.pdf.

Ge, X. X., Conger, R. D., Elder, G., Ge, X. X., Conger, R. D., & Elder, G. r. (2001). Junior High Life Experience Survey--modified. *Developmental Psychology*, *37,* 404-417.

Giele, J., & Elder, G. r. (1998). *Methods of life course research: Qualitative and quantitative approaches*. Thousand Oaks, CA US: Sage Publications, Inc.

Gilligan, C. (1982). *In a different voice: Psychological theory and women's developmen*t. Cambridge, MA: Harvard University Press.

Goodman, E., & Capitman, J. (2000). Depressive symptoms and cigarette smoking among teens. *Pediatrics*, *106*(4), 748.

Goodman, E., & Whitaker, R. (2002). A prospective study of the role of depression in the development and persistence of adolescent obesity. *Pediatrics*, *110*(3), 497-504.

Hampel, P., & Petermann, F. (2005). Age and gender effects on coping in children and adolescents. *Journal Of Youth And Adolescence*, *34*(2), 73.

Hankin, B. L., & Abramson, L. Y. (1999). Development of gender differences in depression: Description and possible explanations. *Annals Of Medicine*, *31*(6), 372-379.

Hankin, B. L., Abramson, L. Y., & Siler, M. (2001). A prospective test of the hopelessness theory of depression in adolescence. *Cognitive Therapy & Research*, *25*(5), 607-632.

Haque, A. (1988). Relationship between perceived maternal acceptance-rejection and self-esteem among young adults in Nigeria. *Journal of African Psychology*, *1*, 15-24.

Hill, J. 1983. The intensification of gender-related role expectations during early adolescence. In J. Brooks-Gunn. *Girls at puberty*. 1983. (pp. 201-228). New York: New York.

Hirsch, B. (1985). Adolescent coping and support across multiple social environments. *American Journal Of Community Psychology*, *13*(4), 381-392.

House, J. S. (1981). *Work stress and social support.* Reading, MA: Addison-Wesley.

Hoyt, L. T., Chase-Lansdale, P., McDade, T. W., & Adam, E. K. (2012). Positive youth, healthy adults: Does positive well-being in adolescence predict better perceived health and fewer risky health behaviors in young adulthood? *Journal Of Adolescent Health*, *50*(1), 66-73.

Hurd, T. (2005). *Nurturing Children and Youth.* Unitarian Universalist Assn. Print.

Jelicic, H., Bobek, D., Phelps, E., Lerner, R., & Lerner, J. (2007). Using positive youth development to predict contribution and risk behaviors in early adolescence: Findings from the first two waves of the 4-H Study of Positive Youth Development. *International Journal of Behavioral Development*, *31*, 263–273.

Jessor, R., Donovan, J., & Costa, F. (1991). *Beyond adolescence: Problem behavior and young adult development*. New York, NY US: Cambridge University Press.

Jessor, R., Van Den Bos, J., Vanderryn, J., Costa, F. M., & Turbin, M. S. (1995). Protective factors in adolescent problem behavior: Moderator effects and developmental change. *Developmental Psychology*, *31*(6), 923-933.

Johnson, M., Crosnoe, R., & Elder, E. (2011). Insights on adolescence from a life course perspective. *Journal of Research on Adolescence*, *21*(1), 273-280.

Kaplan, S. L., Hong, G. K., & Weinhold, C. (1984). Epidemiology of depressive symptomatology in adolescents. *Journal Of The American Academy Of Child Psychiatry*, 2391-98.

Katz, B. N., Esparza, P., Carter, J., Grant, K. E., & Meyerson, D. A. (2012). Intervening processes in the relationship between neighborhood characteristics and psychological symptoms in urban youth. *Journal Of Early Adolescence*, *32*(5), 650-680.

Keating D. (2004). Cognitive and brain development. In Lerner & Steinberg, *Handbook of Adolescent Psychology (2nd ed.)* (pp. 45–84). New Jersey: John Wiley & Sons, Inc.

Kessler, R., & Walters, E. (1998). Epidemiology of DSM-III-R major depression and minor depression among adolescents and young adults in the National Comorbidity Survey. *Depression And Anxiety*, *7*(1), 3-14.

Kessler, R.C. & Price, R.H. (1985). Social support in psychopathology, stress, social support, and coping processes. *Annual Review of Psychology*, *36*(53), 1-72.

Ketterlinus, R. (1994) *Adolescent problem behaviors*. (pp. 145). New York, New York: Lawrence Erlbaum Associates, Inc.

King, C. A., Naylor, M. W., Segal, H. G., Evans, T., & Shain, B. N. (1993). Global self-worth, specific self-perceptions of competence, and depression in adolescents. *Journal Of The American Academy Of Child & Adolescent Psychiatry*, *32*(4), 745-752.

Kobus, K., & Reyes, O. (2000). A descriptive study of urban Mexican American adolescents' perceived stress and coping. *Hispanic Journal Of Behavioral Sciences*, *22*(2), 163-178.

Kumpfer, K., & Turner, C. (1990). The social ecology model of adolescent substance abuse: Implications for prevention. *The International Journal Of The Addictions*, *25*(4A), 435-463.

Laible, D. (2004). Maternal emotional expressiveness and attachment security: Links to representations of relationships and social behavior. *Merrill-Palmer Quarterly: Journal Of Developmental Psychology, 52*(4), 645-670.

Larson, R.W., Moneta, G., Richards, M.H., & Wilson, S. (2002). Continuity, stability, and change in daily emotional experience across adolescence. *Child Development, 73*, 1151–65.

Larson, R. W., & Richards, M. H. (1991). Daily companionship in late childhood and early adolescence: Changing developmental contexts. *Child Development*, *62*, 284-300.

Lenzi, M., Vieno, A., Perkins, D., Pastore, M., Santinello, M., & Mazzardis, S. (2012). Perceived neighborhood social resources as determinants of prosocial behavior in early adolescence. *American Journal Of Community Psychology*, *50*(1-2), 37-49.

Lerner, R. M., Abo-Zena, M., Bebiroglu, N., Brittian, A., Doyle, A., & Isaac, S. (2009). Positive youth development: Contemporary theoretical perspectives. In R. DiClemente, R. Crosby, & J. Santelli (Eds.), *Adolescent health: Understanding and preventing risk behaviors* (pp. 115 – 128). San Francisco, CA : Jossey-Bass.

Lerner, R. M., & Galambos, N. L. (1998). Adolescent development: Challenges and opportunities for research, programs, and policies. *Annual Review Of Psychology*, *49*(1), 413.

Lerner R.M., & Steinberg L, eds. (2004). *Handbook of Adolescent Psychology.* 2nd ed. Hoboken, NJ: Wiley.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, *126*(2), 309-337.

Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1998). Major depressive disorder in older adolescents: Prevalence, risk factors and clinical implications. *Clinical Psychology Review*, *18*, 765–794.

Licitra-Kleckler, D. M., & Waas, G. A. (1993). Perceived social support among high-stress adolescents: The role of peers and family. *Journal Of Adolescent Research*, *8*(4), 381-402.

Lifrak, P. D., McKay, J. R., Rostain, A., Alterman, A. I., & O'Brien, C. P. (1997). Relationship of perceived competencies, perceived social support, and gender to substance use in young adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*, 933–940.

Loeber, R., & Wikstro¨m P-O. (1993). Individual pathways to crime in different types of neighborhood. In D. P. Farrington, R. J. Sampson, & P-O. Wikstro¨m (Eds.*), Integrating individual and ecological aspects of crime* (pp. 169–204). Stockholm, Sweden: National Council on Crime Prevention.

McBride, C., Curry, S., Cheadle, A., Anderman, C., Wagner, E., Diehr, P., & Psaty, B. (1995). School-level application of a social bonding model to adolescent risk-taking behavior. *Journal Of School Health*, *65*(2), 63-68.

McKenzie, D. P., Toumbourou, J. W., Forbes, A. B., Mackinnon, A. J., McMorris, B. J., Catalano, R. F., & Patton, G. C. (2011). Predicting future depression in adolescents using the Short Mood and Feelings Questionnaire: A two-nation study. *Journal Of Affective Disorders*, *134*(1-3), 151-159.

McNeely, C., & Falci, C. (2004). School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *Journal Of School Health*, *74*(7), 284-292.

Merrill, R. M., Folsom, J. A., & Christopherson, S. S. (2005). The influence of family religiosity on adolescent substance use according to religious preference. *Social Behavior & Personality: An International Journal*, *33*(8), 821-835.

Messer, S. (1995). Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents: Factor composition and structure across development. *International Journal of Methods in Psychiatric Research, 5*, 251-262.

Micucci, J. A. (1998). *The adolescent in family therapy: Breaking the cycle of conflict and control*. New York: Guilford.

Millings, A., Buck, R., Montgomery, A., Spears, M., & Stallard, P. (2012). School connectedness, peer attachment, and self-esteem as predictors of adolescent depression. *Journal Of Adolescence*, *35*(4), 1061-1067.

Millstein, S. G., & And, O. (1993). *Promoting the health of adolescents: New directions for the twenty-first century.* (pp. 97-108). New York: Oxford University Press.

Millstein, S. G., & Halpern-Felsher, B. L. (2002). Judgements about risk and perceived invulnerability in adolescents and young adults. *Journal Of Research On Adolescence (Wiley-Blackwell)*, *12*(4), 399.

Monahan, K., Egan, E. A., Van Horn, M., Arthur, M., & Hawkins, D. (2011). Community-level effects of individual and peer risk and protective factors on adolescent substance Use. *Journal Of Community Psychology*, *39*(4), 478-498.

Mulye, T., Park, M., Nelson, C., Adams, S., Irwin, C., & Brindis, C. (2009). Trends in adolescent and young adult health in the United States. *Journal Of Adolescent Health*, *45*(1), 8-24.

Muris, P. (2002). Relationships between self-efficacy and symptoms of anxiety disorders and depression in a normal adolescent sample. *Personality and Individual Differences*, *32*, 337 – 348.

Musick, M.A., Herzog, A.R., & House, JS. (1999). Volunteering and mortality among older adults: Findings from a national sample. *J. Gerontol.B: Psychol. Sci. Soc. Sci*. *54*: S173–80.

Nolen-Hoeksema, S. (2001). Gender differences in depression. *Current Directions in Psychological Science*, *10*(5), 173-176.

Neckerman, H. J. (1996). The stability of social groups in childhood and adolescence: The role of the classroom social environment. *Social Development*, *5*(2), 131-145.

Newcomb, M. D., & Felix-Ortiz, M. (1992). Multiple protective and risk factors for drug use and abuse: Cross-sectional and prospective findings. *Journal of Personality and Social Psychology*, *63*, 280–296.

Nolan, S. A., Flynn, C., & Garber, J. (2003). Prospective relations between rejection and depression in young adolescents. *Journal Of Personality And Social Psychology*, *85*(4), 745-755.

O'Koon, J. (1997). Attachment to parents and peers in late adolescence and their relationship with self-image. *Adolescence*, *32*, 471-482.

Orvaschel, H., Weissman, M. M., & Kidd, K. K. (1980). Children and depression: The children of depressed parents; the childhood of depressed patients; depression in children. *Journal Of Affective Disorders*, *2*(1), 1-16.

Pals, H. (2012). Long-term effects of adolescent negative self-feelings on adult deviance: Moderated by neighborhood disadvantage, mediated by expectations. *American Journal of Criminal Justice.* Published online. 7-21-2012.

Parrott, A. C. (1995). Stress modulation over the day in cigarette smokers. *Addiction*, *90*(2), 233-244.

Paterson, J., Pryor, J., & Field, J. (1995). Adolescent attachment to parents and friends in relation to aspects of self-esteem. *Journal Of Youth And Adolescence*, *24*(3), 365-376.

Pavis, S., Cunningham-Burley, S., & Amos, A. (1998). Health related behavioral change in context: Young people in transition. *Social Science & Medicine*, *47*(10), 1407-1418.

Peterson, A. (1993). Depression in adolescence. *American Psychologist, 48*(2), 155-168.

Penner, L., Dovidio, J., Piliavin, J., & Schroeder, D. (2005). Prosocial behavior: Multilevel perspectives. *Annual Review of Psychology*, *56*, 365-392.

Pickett, W. W., Dostaler, S. S., Craig, W. W., Janssen, I. I., Simpson, K. K., Shelley, S., & Boyce, W. F. (2006). Associations between risk behavior and injury and the protective roles of social environments: An analysis of 7235 Canadian school children. *Injury Prevention*, *12*(2), 87-92.

Pine, D., Cohen, E., Cohen, P., & Brook, J. (1999). Adolescent depressive symptoms as predictors of adult depression: moodiness or mood disorder?. *The American Journal Of Psychiatry*, *156*(1), 133-135.

Pipher, M. (1994). *Reviving Ophelia*. New York: Grosset/Putnam.

Prinstein, M., Boergers, J., & Spirito, A. (2001). Adolescents' and their friends' health-risk behavior: Factors that alter or add to peer influence. *Journal Of Pediatric Psychology*, *26*(5), 287-298.

Putnam, R D (1996). The strange disappearance of civic America. *The American Prospect*, *24*, 1–17.

Reddy, R., Rhodes, J. E., & Mulhall, P. (2003). The influence of teacher support on student adjustment in the middle school years: A latent growth curve study. *Development And Psychopathology*, *15*(1), 119–138.

Rew, L. (2005). *Adolescent health*. The University of Texas. Austin.

Rierdan, J., & Koff, E. (1997). Weight, weight-related aspects of body image, and depression in early adolescent girls. *Adolescence, 32*(127), 615-624.

Roth, J., & Brooks-Gunn, J. (2000). What do adolescents need for health development? Implications for youth policy. *Social Policy Report*, *25*, 3-19.

Rueger, S., Malecki, C., & Demaray, M. (2010). Relationship between multiple sources of perceived social support and psychological and academic adjustment in early adolescence: Comparisons across gender. *Journal Of Youth And Adolescence*, *39*(1), 47-61.

Saluja, G., Iachan, R., Scheidt, P., Overpeck, M., Sun, W., & Giedd, J. (2004). Prevalence of and risk factors for depressive symptoms among young adolescents. *Archives Of Pediatrics & Adolescent Medicine*, *158*(8), 760-765.

Sameroff, A., & Chandler, M. (1975). Reproductive risk and the continuum of caretaking causality. In F. Horowitz (Ed.), *Review of child development* (pp. 187–244). Chicago: University of Chicago Press.

Santrock, J. W. (2001). *Adolescence* (8th ed.). New York: McGraw-Hill.

Sanstock, J.W. (2007). *A topical approach to life span development 4th ed*. (Ch. 15, pp. 489–491). New York: McGraw-Hill.

Savin-Williams, R. C., & Berndt, T. J. (1990). Friendship and peer relations. In S. S. Feldman & G. R. Elliot (Eds.), *At the threshold: The developing adolescent*. Cambridge, MA: Harvard University Press.

Schulenberg, J.E.; Maggs, J.L.; & O'Malley, P.M. (2003). How and why the understanding of developmental continuity and discontinuity is important: The sample case of long-term consequences of adolescent substance use. In: Mortimer, J.T., and Shanahan, M.J., eds. *Handbook of the life course* (pp. 413–436). New York: Kluwer Academic/Plenum Publishers.

Shanahan, L. L., Copeland, W. E., Costello, E. J., & Angold, A. A. (2011). Child-, adolescent- and young adult-onset depressions: Differential risk factors in development? *Psychological Medicine*, *41*(11), 2265-2274.

Simantov, E. E., Schoen, C. C., Klein, J. J., Glied, S. S., & Pine, D. S. (2000). Health compromising behaviors: Why do adolescents smoke or drink? *Archives Of Pediatrics And Adolescent Medicine, 154*(10), 1025-1033.

Simmons, R. G., & Blyth, D. A. (1987). *Moving into adolescence: The impact of pubertal change and school context*. New York: Aldine de Gruyter.

Slavin, L. A., & Rainer, K. L. (1990). Gender differences in emotional support and depressive symptoms among adolescents: A prospective analysis. *American Journal of Community Psychology*, *18*, 407–421.

Smetana, J., Campione-Barr, A., & Metzger, N. (2006). In*: Annual review of psychology (Vol 57)* (pp. 255-284). Fiske, Susan T. (Ed.); Kazdin, Alan E. (Ed.); Schacter, Daniel L. (Ed.); Palo Alto, CA, US: Annual Reviews.

Steinberg, L. (2001). We know some things: Parent-adolescent relations in retrospect and prospect. *Journal of Research in Adolescence*, *11*(1), 1-19.

Trzesniewski, K. H., Donnellan, M., Moffitt, T. E., Robins, R. W., Poulton, R., & Caspi, A. (2006). Low self-esteem during adolescence predicts poor health, criminal behavior, and limited economic prospects during adulthood. *Developmental Psychology*, *42*(2), 381-390.

Tully, E., Iacono, W., & McGue, M. (2008). An adoption study of parental depression as an environmental liability for adolescent depression and childhood disruptive disorders. *American Journal Of Psychiatry*, *165*(9), 1148-1154.

Twenge, J. M., Baumeister, R. F., DeWall, C., Ciarocco, N. J., & Bartels, J. (2007). Social exclusion decreases prosocial behavior. *Journal Of Personality And Social Psychology*, *92*(1), 56-66.

University of Massachusetts Medical School (2007). Inhaling from just one cigarette can lead to nicotine addiction: Kids show signs of addiction almost immediately. *ScienceDaily.* Retrieved April 23, 2013, from http://www.sciencedaily.com/releases/2007/07/070703171843.htm.

Urberg, K., Goldstein, M. S., & Toro, P. A. (2005). Supportive relationships as a moderator of the effects of parent and peer drinking on adolescent drinking. *Journal Of Research On Adolescence*, *15*(1), 1-19.

Urberg, K.A., Degirmencioglu, S.M., Tolson, J.M., & Halliday-Scher, K. (1995). The structure of adolescent peer networks. *Dev. Psychol*. *31*, 540–47.

Veselskaa, Z., Geckova, A., Orosova, O., Gajdosova, B., van Dijk, J., & Reijneveld, S. (2009). Self-esteem and resilience: The connection with risky behavior among adolescents. *Addictive Behaviors*, *34*(3), 287-291.

Wang, M., Brinkworth, M., & Eccles, J. (2013). Moderating effects of teacher–student relationship in adolescent trajectories of emotional and behavioral adjustment. *Developmental Psychology*, *49*(4), 690-705.

Wen, M., Van Duker, H., Olson, L. (2009). Social contexts of regular smoking in adolescence: Towards a multidimensional ecological model. *Journal of Adolescence, 32,* 671-692.

White, H. R., Pandina, R. J., & LaGrange, R. L. (1987). Longitudinal predictors of serious substance use and delinquency. *Criminology*, *25*, 715–740.

Wills, T. (1992). The role of life events, family support, and competence in adolescent substance use: A test of vulnerability and protective factors. *American Journal of Community Psychology*. *20*(3), 349-374.

Wills, T., & Cleary, S. D. (1996). How are social support effects mediated? A test with parental support and adolescent substance use. *Journal Of Personality And Social Psychology*, *71*(5), 937-952.

Wichstrom, L. (1999). The emergence of gender differences in depressed mood during adolescence: The role of intensified gender socialization. *Dev Psych, 35,* 232-45.

Ystgaard, M. (1997). Life stress, social support and psychological distress in late adolescence. *Social Psychiatry and Psychiatric Epidemiology*, *32*, 277–283.

Yurgelun-Todd, D. (2007). Emotional and cognitive changes during adolescence. *Current Opinion In Neurobiology*, *17*(2), 251-257.